# Data Retrieval Software

## User Manual

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# Table Of Contents


Introduction ..... 1
Program Features ..... 1
Application Compatibility ..... 1
Communications ..... 1
Device Storage – JemRead Meter File ..... 2
Data Storage – Meter History Files ..... 2
Load Profile Data ..... 3
Installing the Program ..... 5
Minimum System Requirements ..... 5
Software Installation ..... 5
Uninstalling JEMRead ..... 6
How To Use *JEMRead* ..... 7
Getting Started ..... 7
JEM1/JEM2 Meter Setup ..... 12
Defining a JEM2 Meter ..... 12
Display Register Information ..... 13
Load Profile Setup ..... 16
Defining a JEM1/EXJ Meter ..... 18
Display Register Information ..... 18
Load-Profile Setup ..... 23
Manual Retrieval of Meter Data ..... 25
Sample Printout ..... 35
Automatic Retrieval of Meter Data ..... 36
Editing a Group ..... 40
Menu Descriptions ..... 41
File Menu ..... 42
Setup Menu ..... 43
Meter Menu ..... 45
Help Menu ..... 54
Need Help? ..... 55
Warranty ..... 55

# INTRODUCTION

*JEMRead*™ is a Microsoft Windows™-based program used with the Scientific Columbus JEMStar, JEM10, JEM2, and JEM1 polyphase electricity meters. The primary function of the program is to establish communications with the meter and download stored meter data to a Personal Computer for future analysis. This procedure can be performed manually, or you can set up a schedule to perform downloads automatically at regular intervals. The program is easy to use, and each operation is accessible through simple Windows pull-down menus.

*JEMRead* has many functions that enable the user to efficiently process and organize data from metering devices. *JEMRead* also offers the flexibility to process data from groups of meters or one meter at a time.

*JEMRead* does not have the capability to change any of the meter's configuration parameters; the main purpose of the *JEMRead* program is to establish communications and correctly label downloaded data from the meter. For meter configuration, refer to the software application and instruction manual included with your meter.

# PROGRAM FEATURES

## *Application Compatibility*

- Retrieves data from JEM1, JEM2, JEM10 and JEMStar meters.
- Supports JEM Binary protocol specifications.
- The program does *not* have the capability to read or convert data from JAV program files.

## *Communications*

- JEMRead can communicate with a meter using a direct serial data connection (RS-232 or RS-485), optical port, or a Hayes command set modem.
- Communicates with an RS-485 connected network of meters on a multidrop line. Each meter must have a unique address to identify itself on the network.
- Communicate with a meter using Ethernet TCP/IP.
- Communications with the meter can be manually tested to prove that all communications parameters are set correctly and all connections are proper.
- The user can specify computer serial ports COM1 through COM4.
- The user can specify a modem initialization string of up to 100 characters (if a modem is being used).
- The baud rate is adjustable up to 38400 bps.

## Device Storage – JemRead Meter File

*JEMRead* maintains a unique device file for each meter's communications setup. The device file includes all the necessary parameters required to connect to a specific meter. The following data is stored in the device file:

- Meter password
- COM port
- Baud rate
- Meter type
- Telephone number (if applicable)
- Hardware address

## Data Storage – Meter History Files

*JEMRead* maintains a set of four history data files (.hst) on your PC for each meter defined in the system. The following data is stored in the history files:

- Load Profile data for each time interval and each channel
- Register Data
- Health Status Data
- Meter Status Data
- Site Monitor (JEMStar meters only)

The time, date, numeric value, and engineering units are saved for each data point. To create a smooth and coherent report, the channel numbers and engineering units are uniform for all data in a given history file.

The length of the history file is user adjustable in 1-day increments from a minimum of 1 day to an unlimited maximum. The limit is determined only by the amount of disk storage space on the user's PC.

The meter data saved in the history file can be exported at any time by the user command "Export". This translates the data into an ASCII comma-separated text file (.CSV) that can be opened by many spreadsheet or word processor programs such as Microsoft Excel™ or Word™. The history file will automatically update whenever the corresponding meter's data is read. The new data is then merged with the existing file data, maintaining chronological order.

The history files for a particular meter can be purged by a user command. A warning message will appear to prevent the user from accidentally activating this function. Note: JEMRead will automatically purge the history file if the load profile interval changes, or if the definition of the channels that are saved in load profile changes.

The history file for each meter contains uniform interval points, however each individual meter can have different interval settings. The program will attempt to synchronize each meter's load profile configuration status whenever a command to read registers or load profile is executed.

## Load Profile Data

The following table describes the types of data available in the Load Profile history.

| Data | Quantities Stored in History File |
|---|---|
| Freeze | Time/Date of command |
| Midnight | Time/Date of command |
| Billing Period Reset | Time/Date of command |
| Time Set | Time/Date before and after setting |
| Power Failure | Time/Date of the failure and restoration |
| Daylight Savings Time Adjustment | Time/Date before and after setting |
| Register Preset | Time/Date of command |
| Register Reads | Time/Date, Register #, Numeric Value, Eng. Units, Data |
| Health Check | Time/Date, Data |
| Reconfiguration * | Time/Date before and after setting |

### History File Modification

To prevent data tampering and accidental deletions, the contents of the meter's history file cannot be edited or modified by the *JEMRead* program. However, the history file can be displayed in a tabular, scrollable form that can be copied to the Windows Clipboard, and then pasted into any other Windows application that accepts ASCII text.

### Scheduled Reads

By selecting Groups in the Main Menu, the user activates the "Groups Wizard", which sets up groups of meters to automatically read on a configurable schedule. There is no limit to the number of schedules or the number of meters per schedule. Each schedule stores a list of defined read dates. The user has the option to easily add schedule dates in common patterns, for example:

1. Once per day
2. Once per week
3. Once per month
4. Twice per month

* The Reconfiguration data will appear in the history file if a meter has been Cold Started, or new firmware has been loaded.

The Groups Wizard allows the user to edit the schedule for any specific changes. The user defines the specific day and time of the day that the reading will take place. During a Read, any of the following commands can be selected by the user to be executed:

1. Health Check
2. Freeze
3. Read Registers – Normal, Alternate, and Test
4. Load Profile
5. Set Time
6. Billing Period Reset
7. Meter Status
8. Site Monitor Alarm (JEMStar meters)
9. Self Read Log Export
10. Event Log Export, Append
11. Event Log Export Overwrite

To allow automatic reads to take place, *JEMRead* must be running at the scheduled read time. A communication log file keeps track of functions performed during schedule execution.

If continuous operation creates a concern, the program can be launched remotely with a command line option. This allows third party scheduling software to launch the program at a specified time so the scheduled read can take place.

*Example:*
JEMRead is scheduled to read a group of meters at 13:00 on the first day of each month. Using your third party software, generate a command line at 12:55 on the first day of the month. Define the path where the program executable is located and include your password:

C:\jemread\jemread.exe\<password>

JEMRead will start up, perform the automatic read, and download the data per the schedule. Note that you cannot use this feature to turn off *JEMRead*.

## Manual Reads

Manual Reads function similar to Scheduled Reads, having all the same commands available. To execute a Manual Read, you must select a meter, and then select commands from the Main pull-down menus (or the toolbar icons). Data from a Manual Read is integrated into the meter's history file along with data from any Scheduled Reads.

# INSTALLING THE PROGRAM

## MINIMUM SYSTEM REQUIREMENTS

To operate *JEMRead* successfully, you must have a Personal Computer with at least the following features:

Pentium™-class or equivalent processor using Windows 95/98/NT 4.0, or better
16 MB RAM
5 MB Hard disk space for the application
5 MB Hard disk space for storing downloaded data files
RS-232C Serial Communications Port
Modem using a Hayes command set (if retrieving data over phone lines)
Ethernet port if retrieving data over TCP/IP
If you intend to connect to a network of meters, you must have an RS-232 serial data cable and RS-232 to RS-485 converter. These items are available from AMETEK or your local electronics supplier.

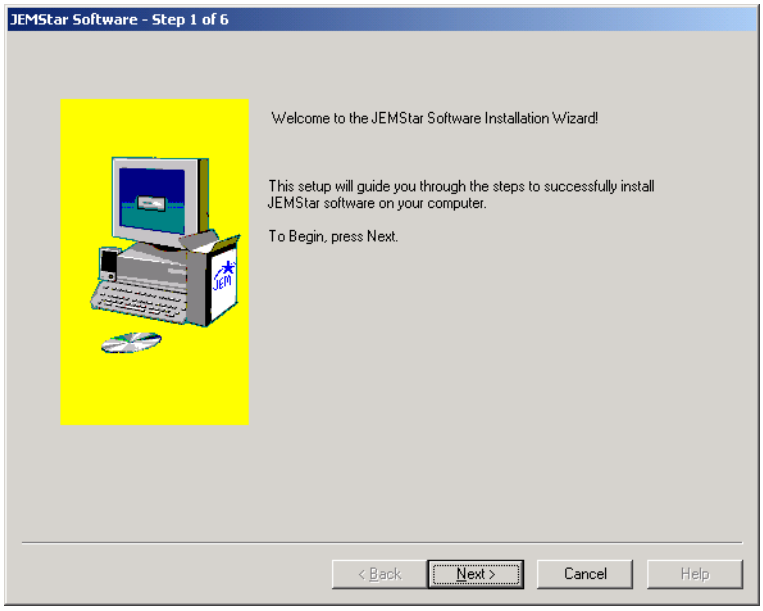
## SOFTWARE INSTALLATION

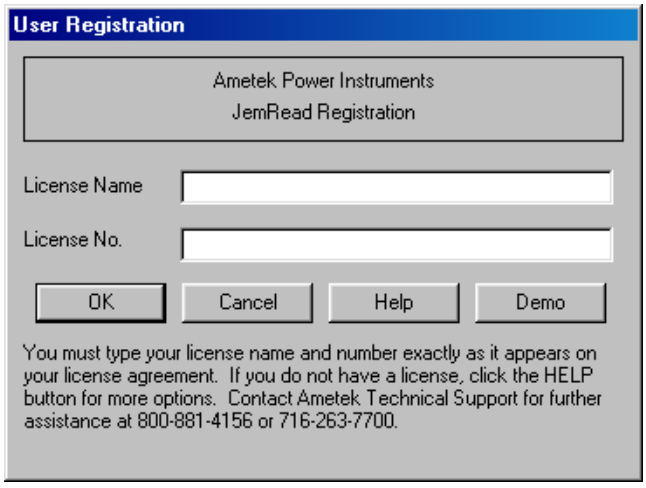
Installation is easy using the JEMStar Installation Wizard to guide you through the steps. The program will have a Name/Serial Number combination that must be entered once during installation. If you do not have a license, an Evaluation Mode is available that allows the user full program access for a 30-day trial period. The program can also be operated in the "Demo" mode, which allows you to view sample data files and manipulate them; it does not allow an actual connection to a meter or downloading meter data. If you would like to license your copy to take advantage of all the program's features, please contact the factory for a serial number.

Before beginning the installation procedure, you should backup each of your *JEMRead* application disks (if using floppy disks). Refer to your Windows Manual for instructions on using the COPY command. After you have copied your *JEMRead* disks, you should write-protect the copies to avoid any inadvertent loss of data, and then store them in a safe place. If you are using the CD-ROM version, keep it in a cool, dry place and it should not need copying.

**To install *JEMRead:***

1. Insert the *JEMRead* application disk #1 in your floppy drive (or CD-ROM in you CD drive).
2. Select "Run..." from the Start menu.
3. Type "a:\setup.exe" (where "a" is the letter of your disk drive).
4. Click on "OK".
5. Follow the JEMStar Installation Wizard instructions on the screen to complete the installation.


JEMStar Software - Step 1 of 6
Welcome to the JEMStar Software Installation Wizard!
This setup will guide you through the steps to successfully install JEMStar software on your computer.
To Begin, press Next.
< Back
Next >
Cancel
Help


User Registration
Ametek Power Instruments
JemRead Registration
License Name
License No.
OK
Cancel
Help
Demo
You must type your license name and number exactly as it appears on your license agreement. If you do not have a license, click the HELP button for more options. Contact Ametek Technical Support for further assistance at 800-881-4156 or 716-263-7700.

The first time you open the program, you will need to enter your License Name and Number. Enter this information exactly as it appears on your license agreement.
If you do not have a license, you can use the full program for a 30-day period by typing **EVAL** in both the license name and number fields. This "Evaluation Mode" will allow connection to meters and downloading data. Note that DEMO mode can be used at any time, but only *simulates* meter connections and downloading data.

Once your have performed this procedure, you do not have to repeat it again.

## *Uninstalling JEMRead*

There are two ways to run the Uninstall program. Each method will have the same results.
*Method 1*: Select the "Uninstall" icon in the Start Menu Program Folder in which *JemRead* was placed during setup. Follow the simple instructions to remove the program.
*Method 2:* Use Windows Explorer to browse the directory in which JEMRead, JEMWare and/or Documentation were installed. One of the installed folders will have a "Uninstall.exe" program executable file in there. Double click on this file and follow the easy instructions for uninstalling JEMRead.

# HOW TO USE *JEMREAD*

*JEMRead* can be used to retrieve meter data in either of two ways. Both methods are discussed in the following pages.

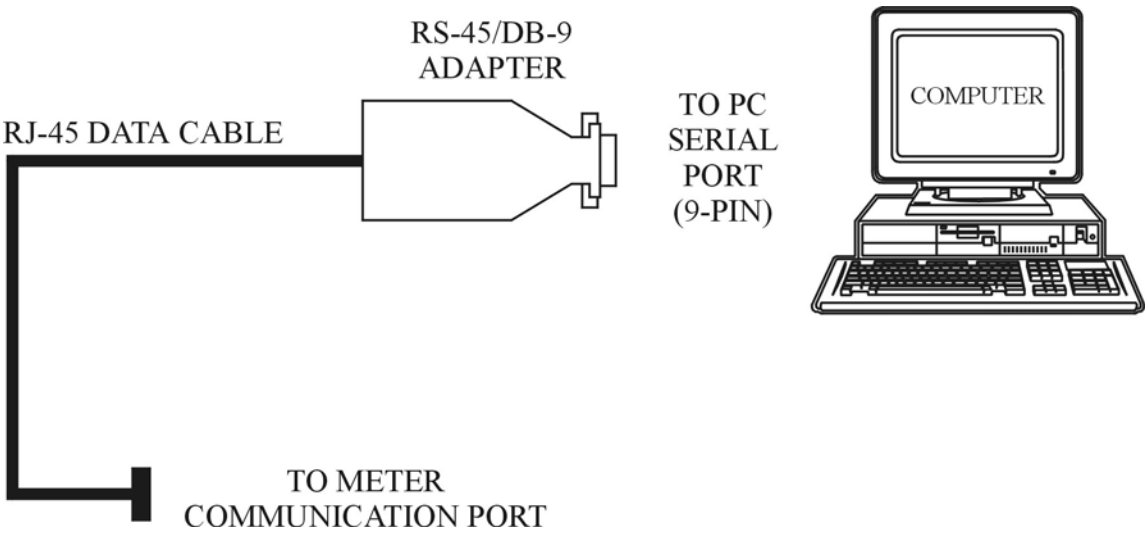
- **Manual Retrieval** requires the user to initiate the download commands from a PC each time retrieval is desired.

- **Automatic Retrieval** may be implemented, whereby the software is configured to generate retrieval commands on a regular schedule that has been pre-defined by the user during program setup. No user intervention is required, and the data is continually stored on the computer's hard drive for future analysis.

## GETTING STARTED

**Step 1: Connect the Hardware**
You can connect a meter to your computer using any of these three methods.

- **Direct Connection** uses your computer's RS-232 COM port wired directly to the RS-232 port on the meter. This is the simplest method, but limits the distance to about 50 ft. and you can only connect one meter at a time.




Optionally, you can create an RS-485 network that will allow you to connect one or more meters to your computer at a time, while increasing the maximum cable distance up to 4000 ft., depending on site conditions. You will need to install an RS-232 to RS-485 converter at your computer's COM port. This device should be available through your local computer supply store, or you can contact AMETEK for the necessary hardware.

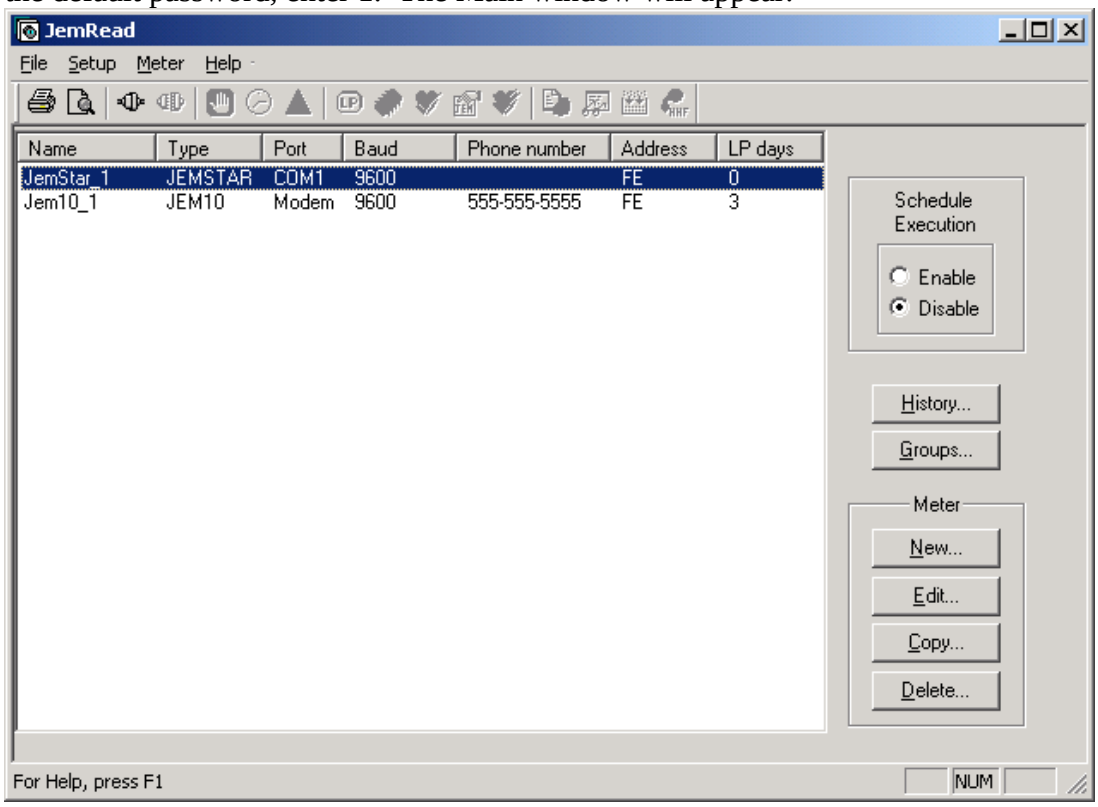
Plug the RS-232/485 converter box into your PC serial port. Connect the RJ-45 data cable between COM1 on the meter and the back of the converter.

If you are assembling your own cable, refer to the meter's User Manual for the required connector types and pinout arrangement.

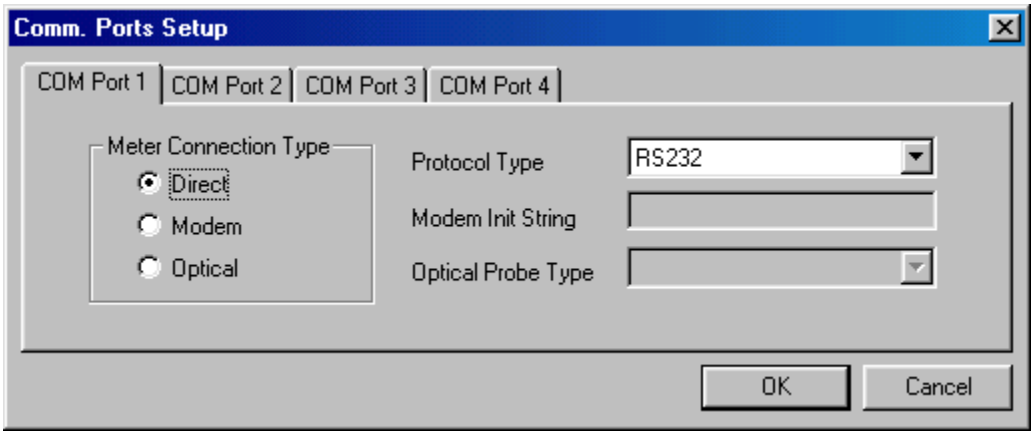
- **Optical connection**: Each meter (except JEM2) has provisions to attach an optical sensor to the front of the meter. The optical sensor will provide an RS-232 output that is connected to your PC the same as the Direct Connection style.
- **Modem Connection** can be used if your meter is equipped with the optional internal modem. *JEMRead* will use your computer's modem to dial up the phone number associated with the meter and retrieve the data over any distance.
- **Ethernet Connection** An Ethernet connection can be used if your meter is equipped with the optional Ethernet Port and your PC is connected on a LAN.

**Step 2: Set up the communication parameters**

Open the *JEMRead* application by double-clicking the program icon on your desktop. You will be asked to enter a program password. If this is the first use, or you are using the default password, enter 1. The Main window will appear.




If this is a first-time use, go to the menu labeled "Setup | Com Ports", and choose the serial port number that your PC is using for communications. This procedure is only required for the initial software installation, or if you change Com ports on your PC.




You must also select whether your communication is Direct Connect, Optical Coupler, or via a Modem.

**Direct**
Use this setting if you are connecting with a standard RS-232 or RS-485 serial communications cable. The signals are available on the meter's pigtail cable (or rear terminal block for Switchboard models). Wires should be terminated with an appropriate connector for your application. Refer to the meter's User Manual 1083-600 for the cable color code and signal functions. Note: If RS-485 is selected, you may need to insert RTS delay times in the Meter Attributes window.

**Optical**
Use this setting if you are connecting with a Scientific Columbus™ Model 5282 Optical Coupler or GE Smart Coupler™. These pickups use a quick-connect magnetic attachment to the front of the meter, and the globe can remain attached during communications. Consult the manuals provided with these devices for operating instructions.

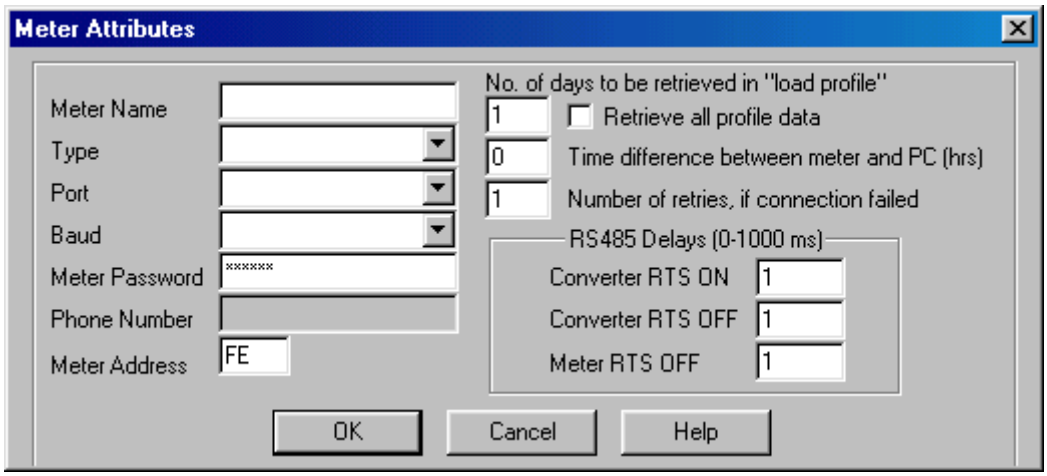
**Modem**
Use this setting if you are connecting with a dial-up modem. If you are using *JEMWare* for meter configuration, the generic Hayes command set is supported; and a Modem Initialization String of up to 100 characters can be used. The default init string "ATZ" is provided and may be sufficient to establish communications. Consult your modem's instruction manual for further information on initialization strings.

NOTE: Do not confuse the Com port on your PC with the serial port on the meter!

**Ethernet Connection**
An Ethernet connection can be used if your meter is equipped with the optional Ethernet Port and your PC is connected on a LAN.

**Step 3: Create a Device Record**

Before communicating with a meter, certain parameters of the meter's hardware configuration must be defined in *JEMRead*. From the Main window, click on New under the Meter group box, and the following window will appear.

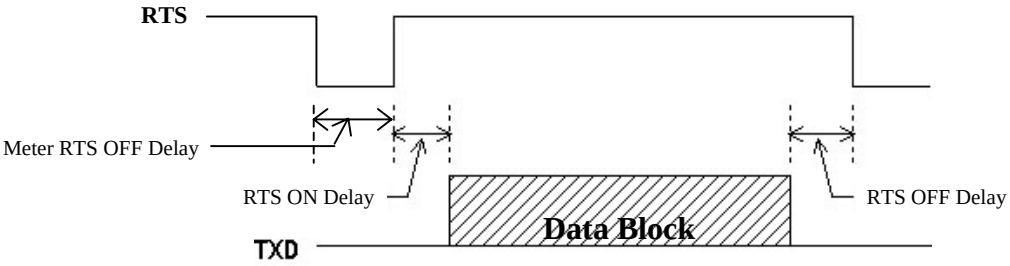



Enter the appropriate information as defined below. Items marked with an asterisk (*) indicate that these settings must match the corresponding settings that were programmed into the meter using *JEMWare* or *JEMSET* Configuration software.

- Meter Name (your company identifier that is exclusive to this meter)
- Meter Type (JEM10 | JEMStar | JEM1-B | JEM2-B | JEM2-A) Note: If you select a JEM-1 or JEM-2 meter, additional setup fields must be configured. Refer to the "JEM1/JEM2 Setup" section in the following pages.
- COM port on your computer (1 | 2 | 3 | 4)
- *Baud rate of the modem in your meter (300 | 600 | 1200 | 2400 | 9600 | 19200 | 38400)
- IP Address:port For Ethernet TCP/IP communications, enter the meter's IP Address: xxx.xxx.xxx.xxx and Port Address: xxxx. Example: 10.49.4.56 3444
- *Meter Password, must be 6 alphanumeric characters (displayed as stars)
- Telephone number of the meter's modem, if applicable (up to 50 alphanumerics)
- *Meter Address (00 - FF hex). Note: If you are using JEMStar meters, you will need to enter the hex equivalent of the decimal address you entered in JEMWare. MS Windows includes a calculator (Start/Programs/Accessories/Calculator/View /Scientific) to help make the conversion. FE (254) is the universal default setting and will work with any single meter (except JEM2). The address must be unique for each meter if they are networked together via their serial ports.
- Number of days to be retrieved during a Load Profile download:
  - Starts from the present day, and includes the completed part of the day
  - Specify any number of days, or click the checkbox for all data in the meter's memory
- Time zone difference (if any) between the meter location and your PC (+ / - Hours)
- Number of retries that the program will attempt to make if the connection attempt fails.

- RTS (Request To Send) time delay, in milliseconds. This is used with RS-485 serial port communications, and will command the meter to wait the specified amount of time before the port verifies the operation has been performed.

**RTS ON / RTS OFF / Meter RTS OFF Delays:**
Certain RS-485 parameters are required for the Request To Send (RTS) handshaking signal when used in some applications such as radio-modems. If the meter is not used in such applications, simply set all three delays to 0 ms.




*RTS ON Delay*
Corresponds to the delay between the time that the RTS line is asserted and the time that the data is transmitted. The delay time is specific to the type of RS-485 converter being used. For example, a delay of 5 ms is sufficient for the Black box converters that are supplied by the factory. The appropriate delay time should come with your RS-485 converter documentation.

*RTS OFF Delay*
Corresponds to the delay between the time that the meter stops sending data and the time that the RTS line is de-asserted. The delay time is specific to the type of RS-485 converter being used. For example, a delay of 5 ms is sufficient for the Black box converters that are supplied by the factory. The appropriate delay time should come with your RS-485 converter documentation.

*Meter RTS OFF Delay*
The Meter RTS OFF delay must be set to match what the meter is configured for at this point. Note: The factory default setting of a new (or Cold Started) meter's RTS off delay is 80mS.

Repeat the above step for each meter that you want to add to the *JEMRead* archive.
Note: You will assign meters to specific “Groups” later.

# JEM1/JEM2 METER SETUP

If you are using *JEMRead* to download data from a JEM1 or JEM2 meter, special program fields must be configured. All the previously mentioned setup features apply to every meter type, and the following information must be added for the JEM1 and JEM2 only.

***Important:*** When setting up the program, not all menu choices apply to all meters. For example, a JEM1 meter cannot be set for 19200 baud, even though it is an available selection in the window. Make sure of your meter's settings and capabilities before attempting to set up *JEMRead*.

The Meter Attributes screen is configured the same for all meters except if you select "JEM1-B", "JEM2-A", or "JEM2-B" in the Type field. When you do this, the bottom of the screen is expanded to include additional setup fields unique to these meters.

The first step is to complete the top section of the screen as described in the previous pages. Once completed, you can define the lower section fields.

## *Defining a JEM2 Meter*

### Information Required

Some information is required before a JEM2 meter can be completely defined in *JEMRead*.

- **JEM2 Configuration Printout**

Each JEM2 meter has an associated configuration number that can be accessed by touching the left touch pad on the meter until a "50" is displayed. The configuration number then appears on the register display on the right. A configuration printout with that particular configuration number (or referenced as catalog number on older printouts) is required. If it is not available, contact AMETEK's Technical Support Group. A printout of every JEM2 configuration that is created at AMETEK is kept on record.

- **Switch-Position Settings on the Comm Board**

The switch-position settings on the JEM2 communication board are required to know the scalar selection and the second digit of the comm address. Reference the JEM2 Instruction Manual for the interpretation of the switches. Keep in mind that a "1" listed in the manual means the switch position is DOWN toward the board. A "0" means the switch position is UP away from the board.

- **Baud Rate Selection**

The baud rate selection on the JEM2 is made on the clock board, and is typically set for the maximum baud rate of 1200 baud. Consult the JEM2 Manual for details.

- **Meter Address**

The meter address must be inserted in JEMRead and can be determined from the switch settings or the configuration printout. *Universal address FE will not work with a JEM2.*

- **Meter Password**

If a meter password has been previously assigned to the meter, the user needs to know this and to enter it in the Password field of the Meter Attributes screen.

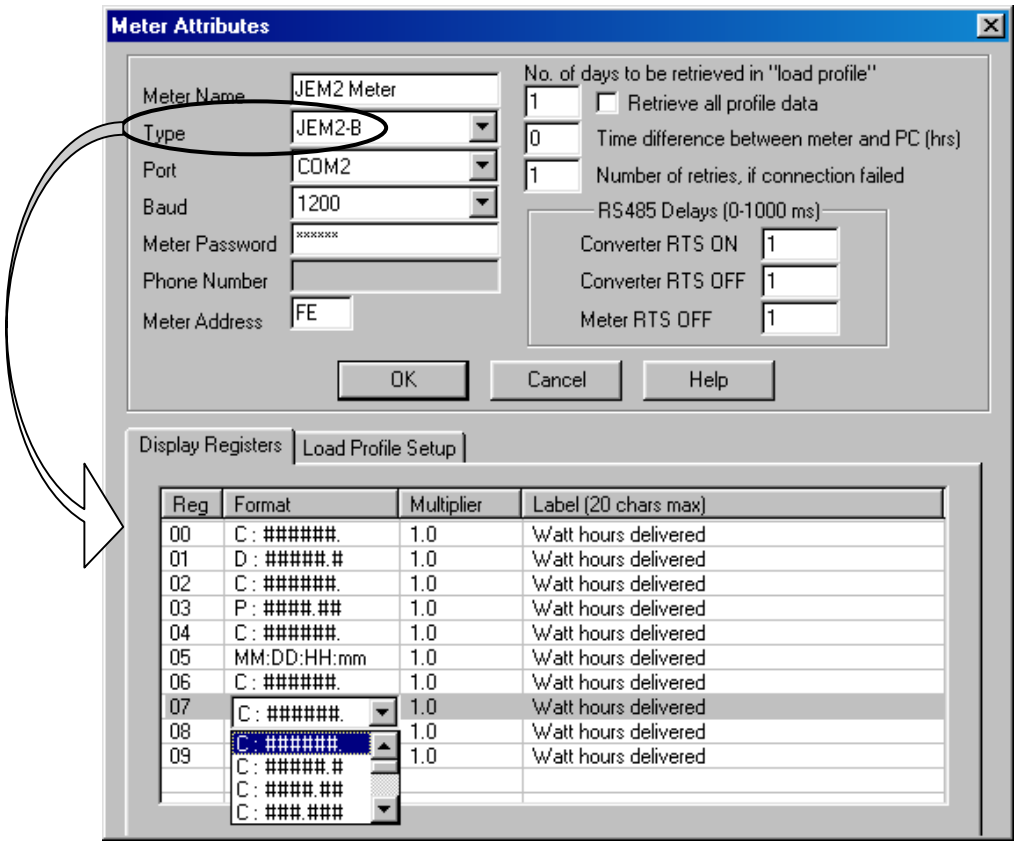
- **ASCII or Binary Communication Protocol**

*JEMRead* is designed to work with ASCII or Binary Protocol. Select Type "JEM-2B" for Binary, or "JEM2-A" for ASCII communication.

- **Meter and Configuration Requirements**

The JEM2 should meet the following list of configuration requirements for the best interface with *JEMRead*:

1. A complete set of 10 display registers should be assigned. If less than 10 registers are defined, *JEMRead* will fill in the unused registers with default assignments.
2. The meter should have the mass-memory option installed.
3. The meter firmware should include the Y2K updates or a later version.




## *Display Register Information*

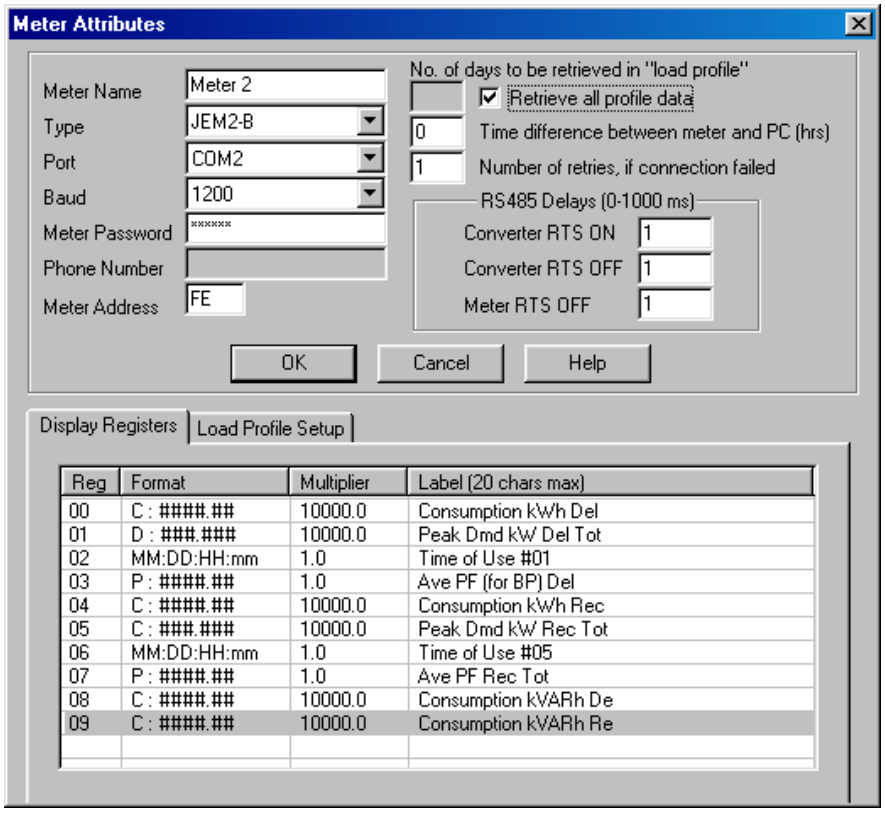
The lower part of the Meter Attributes screen must coincide with the register assignments in the JEM2 meter. By referencing the configuration printout (see the following sample), enter the following information for each register. Make sure each register listed on the configuration printout is entered in *JEMRead*.

```
                Display Register and Pulse Output Assignment

ID Description of Selected Quantity                Decimal Pulse   Ke (Specify
                                                    Point  Channel Engineering
                                                           Number  Units)

00 Consumption kWh Del Tot_____________________ ####.## 1       000.5952
01 Peak Dmd kW Del Tot_____________________ ###.### _       ___.____
02 Time of Peak/Valley Dmd in Reg #01_____ _______ _       ___.____
03 Ave PF (for BP) Del Tot_____________________ ####.## _       ___.____
04 Consumption kWh Rec Tot_____________________ ####.## 2       000.5952
05 Peak Dmd kW Rec Tot_____________________ ###.### _       ___.____
06 Time of Peak/Valley Dmd in Reg #05_____ _______ _       ___.____
07 Ave PF (for BP) Rec Tot_____________________ ####.## _       ___.____
08 Consumption kVARh Del Tot_____________________ ####.## _       ___.____
09 Consumption kVARh Rec Tot_____________________ ####.## _       ___.____
 . Consumption kWh Del Tot_____________________          3       000.5952
 . Consumption kWh Rec Tot_____________________          4       000.5952
 . ____________________________________________          _       ___.____
 . ____________________________________________          _       ___.____
```

***JEM2 Configuration Printout Showing Register Assignments***




*JEMRead screen showing Display Register info acquired from the Configuration Printout*

**Format**

The Format field is identical to the JAV setup, and indicates whether the register is a **C**onsumption register, **D**emand register, **P**ower factor register, or a time-of-use register. It also selects the number of decimal-point places displayed on the register. Click in the Format column, and a pull-down menu will appear. Select the proper format to match what is shown on the meter's configuration printout. The formats are shown below.

| Display Format | Register Type |
|---|---|
| C:######. | Consumption Registers |
| C:#####.# | |
| C:####.## | |
| C:###.### | |
| D:######. | Demand Registers including Present, Coincident, or Peak Demands |
| D:#####.# | |
| D:####.## | |
| D:###.### | |
| P:######. | Power Factor Registers including Average Power Factor and Coincident Power Factor |
| P:#####.# | |
| P:####.## | |
| P:###.### | |
| MM:DD:HH:mm | Time-of-Use Register |

**Multiplier**

The Multiplier field is for the register multiplier. This is based on the JEM2 scalar switch selection on the communication board. On the configuration printout, locate the register multiplier for that particular scalar switch number and enter it for all consumption and demand register types. A decimal point must be entered. Time-of-Use registers can be left with the default multiplier (1.0).

| Scaler Switch Setting | Current Transformer Ratio | Voltage Transformer Ratio | | |
|---|---|---|---|---|
| | Pri/Sec | Pri/Sec | Scaler | Multiplier |
| 0 | 1/1 | 1/1 | 1.00000000 | 1 |
| 1 | 01200/05 | 0040250/115 | 8.40336134 | 10000 |
| 2 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 3 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 4 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 5 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 6 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 7 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 8 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 9 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 10 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 11 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 12 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 13 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 14 | _____/__ | _____/___ | 8.40336134 | 10000 |
| 15 | _____/__ | _____/___ | 8.40336134 | 10000 |

***JEM2 Configuration Printout Illustrating Primary-Calibration Scalar Settings. The appropriate switch setting should be selected based on the voltage and current transformer ratios for the installation. The multiplier on the right would be used.***

**Label**
The Label field is used to identify the register in JEMRead printouts, or simply to keep a record of them in the program. This can be any alphanumeric the user desires that will help identify the register.

## *Load Profile Setup*

Refer to the mass-memory section of the configuration printout for Load Profile setup information (see the sample below).

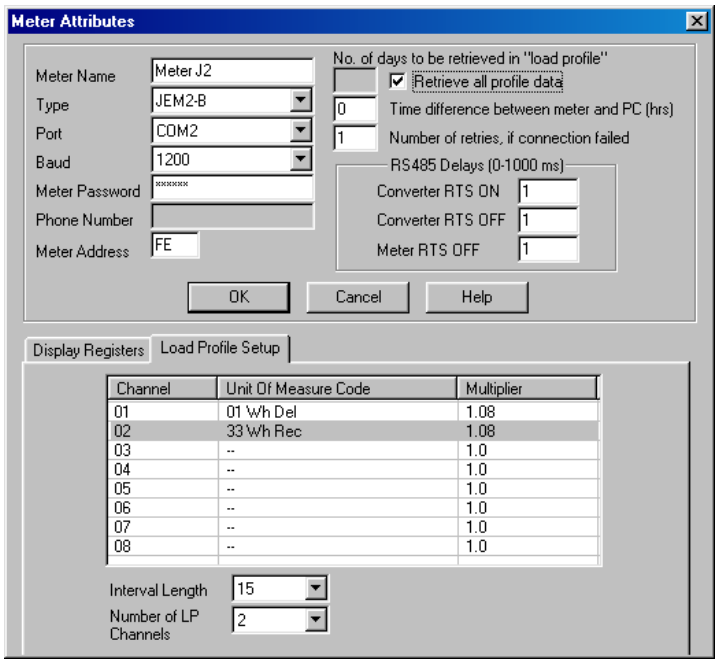
```
Demand Interval Type and Length
Fixed Window, 15 minute interval_____________________________

Demand Deferral 1st
Multiple Demand Peaks Only One
Communications Interface Tens' Address 1
Begin Demand Interval Serial Command Enabled_
Load Profile Freeze Flag Enabled_
Block Check Character (BCC) Checked
Reset Lockout Duration 0010 minutes
Reset Operation Universal Key Reset__
Data Send Delay Time 001/60 seconds

Load Profile Interval Size 15
Load Profile Billing Factor(s) Stored:          Km
1. kWh Delivered_____________________________   0.225000
2. kWh Received_____________________________   0.225000
3. _____________________________________________
4. _____________________________________________
5. _____________________________________________
6. _____________________________________________
7. _____________________________________________
8. _____________________________________________
```

***JEM2 Configuration Printout Containing Load-Profile Information***

Each of the load profile channels in the configuration sheet must be defined in *JEMRead*.




***Load Profile information taken from the JEM2 Configuration Printout; illustrating the JEMRead Setup***

**Channel**
The Channel is the Load Profile channel number.

**Unit of Measure Code**
The Unit-of-Measure entry must be assigned to define the channel. This is strictly a label used in the *JEMRead* printouts. Use the up and down arrow keys to select the appropriate UOM code. Select a UOM code of "--" if there are no more load profile channels.

**Multiplier**
This is the load profile pulse multiplier. The following formula should be used to enter the multiplier:

For watt, var, Q, and VA quantities:

$$Multiplier = \frac{Km \times PTR \times CTR}{1000}$$

For volt and volt-squared quantities:

$$Multiplier = \frac{Km \times PTR}{1000}$$

Where:

- Km is the pulse constant for the particular load profile channel as listed on the configuration printout.
- PTR is the PT ratio as selected by the scalar switch setting.
- CTR is the CT ratio as selected by the scalar switch setting.

**Interval Length**
This selects the mass-memory (Load Profile) interval length for the JEM2. Refer to the configuration printout to determine the actual value. This should not be confused with the demand interval length.

**Number of LP Channels**
Enter the total number of load profile channels that are in the meter, as determined from the configuration printout.

Once the Meter Attributes screen is complete, you should be able to connect to the meter and read data. Proceed to the Manual Retrieval section of this book to begin the connection process.

## Defining a JEM1/EXJ Meter

**Information Required**

1. A configuration printout from the EXJSET Configuration program.
2. The pulse output (Ke) values in your JEM1.
3. The JEM1 model number for determining what quantities are being measured and on what channels.
4. The PT and CT ratios of the instrument transformer(s) connected to the meter.
5. Your JEM-1 and EXJSET instruction manuals for reference purposes.

**Configuration Requirements**

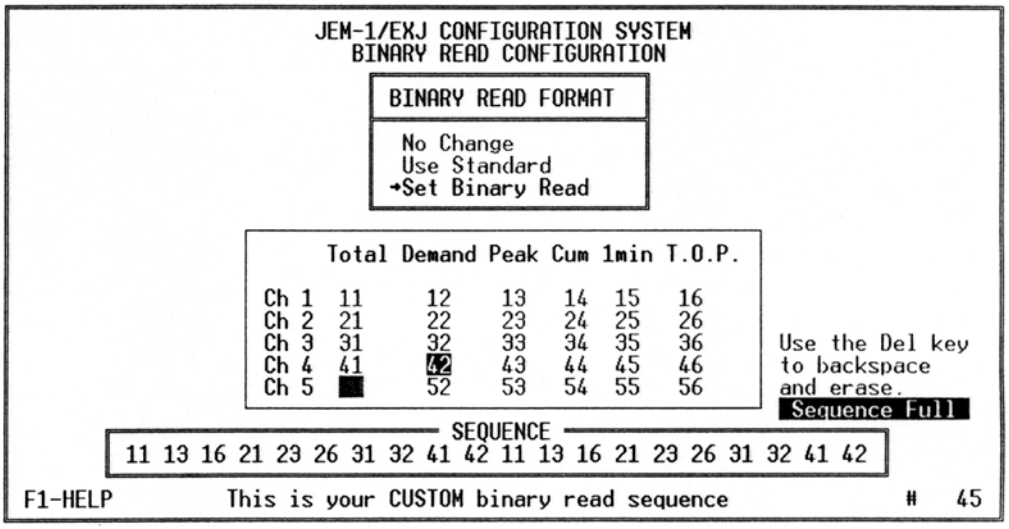
Refer to the EXJSET manual 09493-001 for JEM-1 configuration instructions.

1. The EXJ must be programmed with a queue size no larger than 32,768 bytes. This is set on the mass-memory screen in EXJSET under optional parameters.
2. The comm settings defined during the EXJSET configuration must be set for 1200, N, 8, 1.
3. The EXJ must have a known binary-read format programmed. The "Display Register Information" section below describes the proper way to define the binary-read format. This must be performed correctly so that register data are properly transferred from the EXJ.
4. External Time Tracking must be disabled in the JEM-1; otherwise, the EXJ will not record mass-memory data.
5. If you update the EXJ with new settings for the mass-memory queue size, number of load-profile channels, or load-profile interval length, the mass memory MUST be erased. Failure to do so will prevent load-profile data from being retrieved with *JEMRead*.

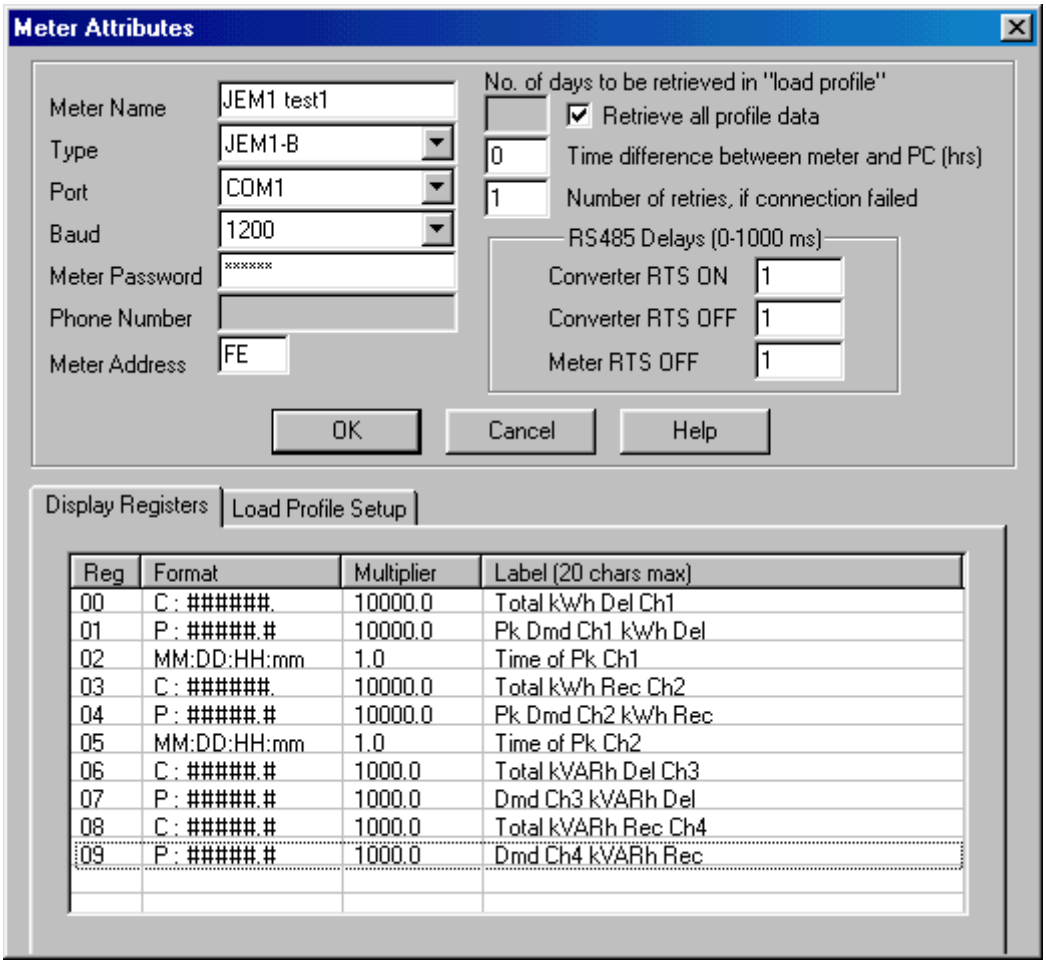
## Display Register Information

This *JEMRead* screen must be set up to match the register assignments in the JEM1 meter. Make sure each register that is listed on the JEM-1 configuration printout is entered in *JEMRead*.

Refer to the configuration printout (see the following sample), and then enter the description of each register in the Display Register Information window of *JEMRead*.

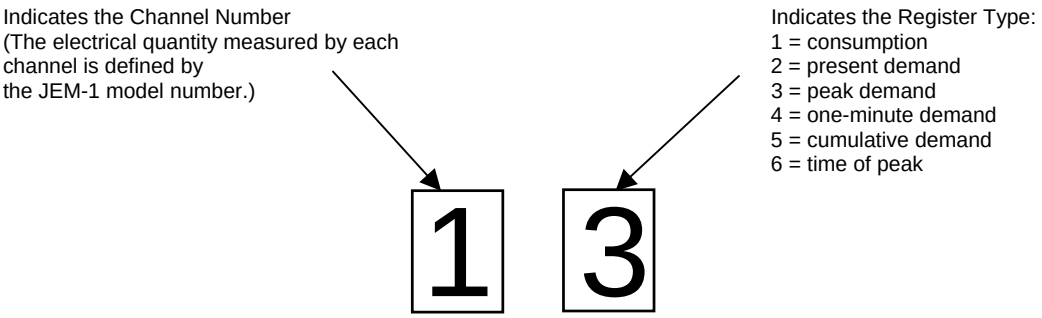

JEM-1/EXJ CONFIGURATION SYSTEM
BINARY READ CONFIGURATION
BINARY READ FORMAT
No Change
Use Standard
→Set Binary Read
Total Demand Peak Cum 1min T.O.P.
Ch 1 11 12 13 14 15 16
Ch 2 21 22 23 24 25 26
Ch 3 31 32 33 34 35 36
Ch 4 41 42 43 44 45 46
Ch 5 52 53 54 55 56
Use the Del key to backspace and erase.
Sequence Full
SEQUENCE
11 13 16 21 23 26 31 32 41 42 11 13 16 21 23 26 31 32 41 42
F1-HELP
This is your CUSTOM binary read sequence
# 45

***Binary-Read Configuration Screen in EXJSET (Under Optional Setup)***




***Display Register Setup in JEMRead***

The binary-read format in EXJSET must be set for either Standard or Custom. At the bottom of the screen is a box labeled "SEQUENCE". The numbers listed in this box indicate which registers will be sent from the EXJ, and the order they are sent. The numbers represent the different registers that are available on the EXJ.


Indicates the Channel Number
(The electrical quantity measured by each channel is defined by the JEM-1 model number.)
Indicates the Register Type:
1 = consumption
2 = present demand
3 = peak demand
4 = one-minute demand
5 = cumulative demand
6 = time of peak
1
3

***EXJSET Binary-Read Register Numbering Scheme***

The **first** digit is the channel-number digit and it indicates the internal JEM1 channels. The EXJSET manual (09493-001) contains a chart in the back that describes all model numbers and the channels for the measurement quantities. As a rule, a one-channel JEM1 measurement quantity will be on channel 2. A two-channel JEM1 measurement quantity will be on channels 1 and 3. A three-channel JEM1 uses channels 1 through 3 and a four-channel JEM1 uses channels 1 through 4. A five-channel JEM1 must be custom set up. In most cases, the fifth channel is used for KVA-calculated demands.

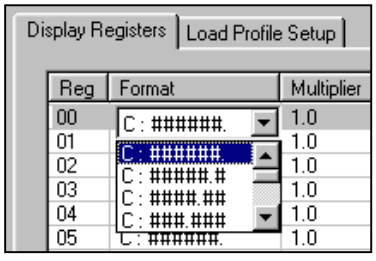
The **second** digit is the register-type digit and represents the different registers of the EXJ. The EXJ register types include consumption, present demand, peak demand, one-minute demand, cumulative demand, and time-of-peak demand.

*JEMRead* can define the format of only 10 registers. The JEM1 binary-read format allows 20 registers to be defined in the Read sequence. Since *JEMRead* can only define the format of 10 registers, the second set of 10 registers in the binary-read sequence must repeat the first 10. It is important to completely fill in the entire sequence. If less than 10 registers are entered in the sequence for retrieval, enter in unused register numbers from undefined channels (e.g.: "52") to fill in the remainder of the first 10 registers in the sequence. Duplicate the first 10 for the second 10 registers to complete the sequence.

Since you may not be able to retrieve all registers with *JEMRead*, it is necessary to select the registers that are the most important. When defining registers in the *JEMRead* "Display Registers" page, the following fields must be defined:

**Format**

The Format field indicates whether the register is a **C**onsumption register, **D**emand register, **P**ower factor register (not used with JEM1), or a time-of-use register. It also selects the number of decimal-point places displayed on the register. Click on the Format column, and a pull-down menu will appear to select the proper format. The formats are shown as follows.



| Display Format | Register Type |
|---|---|
| C:######. | Consumption Registers |
| C:#####.# | |
| C:####.## | |
| C:###.### | |
| D:######. | Demand Registers including Present, Coincident, and Peak Demands |
| D:#####.# | |
| D:####.## | |
| D:###.### | |
| P:######. | Power Factor Registers (Not applicable to JEM1 meters) |
| P:#####.# | |
| P:####.## | |
| P:###.### | |
| MM:DD:HH:mm | Time-of-Use Register |

***Table of Register Settings***

**Multiplier**
This field must be calculated based upon the following formula. Calculations are different for consumption and demand registers, as indicated below.

For Consumption registers:

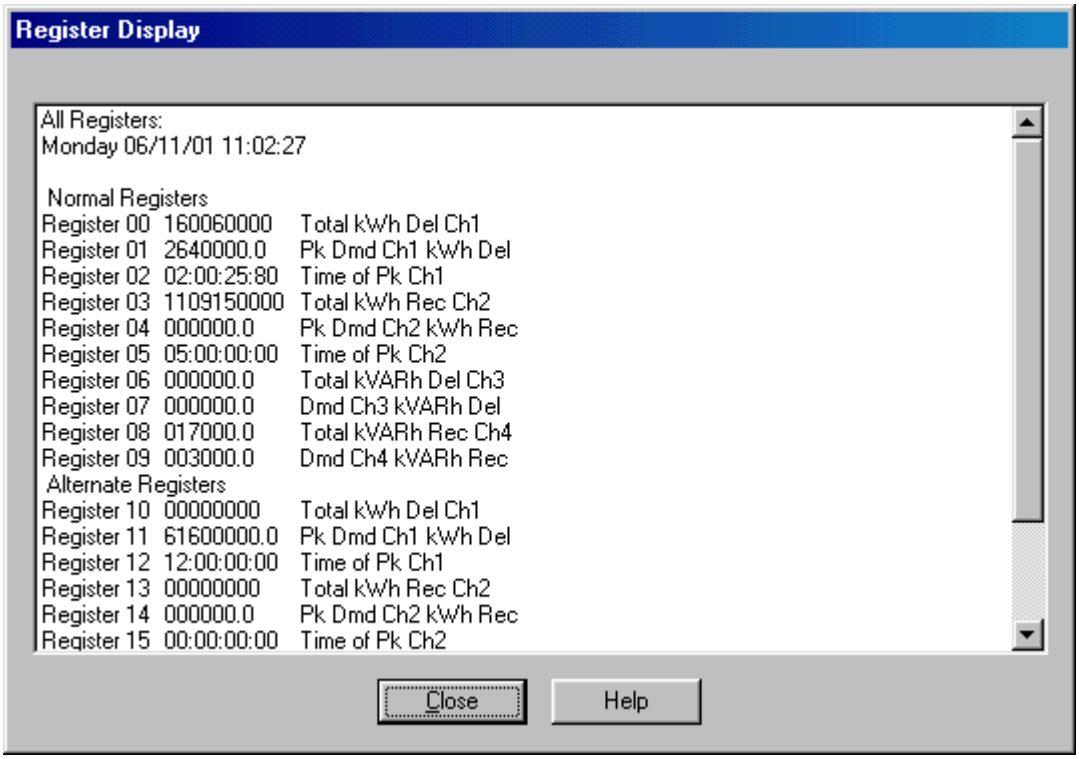
$$Multiplier = \frac{PTR \times CTR \times Ke \times Rd}{1000}$$

For Demand registers:

$$Multiplier = \frac{PTR \times CTR \times Ke}{1000}$$

Where:
PTR = Potential Transformer Ratio
CTR = Current Transformer Ratio
Ke = pulse constant
Rd = register divider for the respective channel (as programmed in EXJSET)
1000 = divider for kilo units (1000000 should be used for mega units)

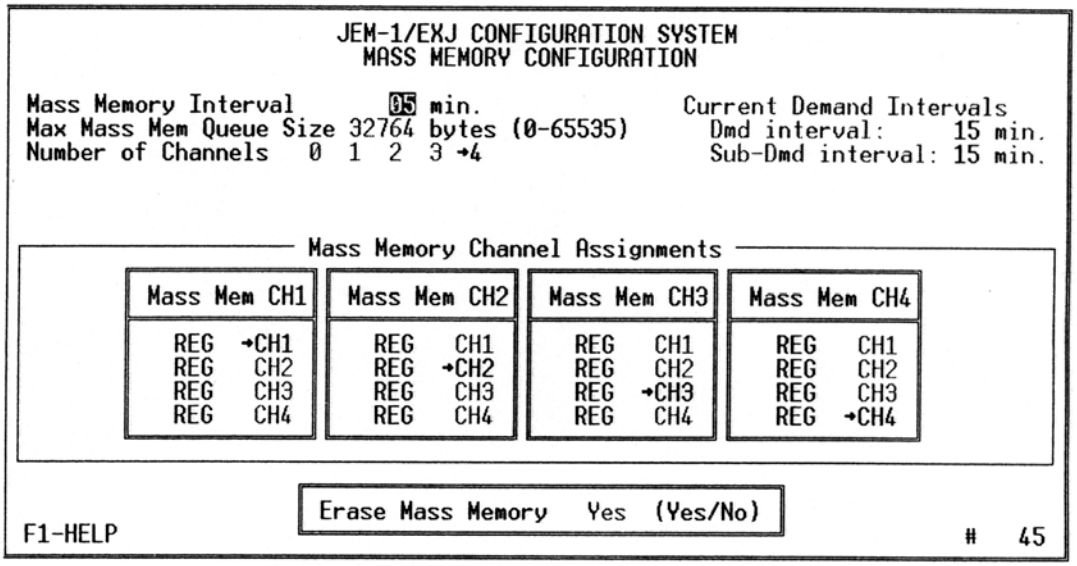
**Label**
The Label field is used to identify the register in *JEMRead* reports. This can be anything the user desires that will help identify the register.


Register Display
All Registers:
Monday 06/11/01 11:02:27
Normal Registers
Register 00 160060000 Total kWh Del Ch1
Register 01 2640000.0 Pk Dmd Ch1 kWh Del
Register 02 02:00:25:80 Time of Pk Ch1
Register 03 1109150000 Total kWh Rec Ch2
Register 04 000000.0 Pk Dmd Ch2 kWh Rec
Register 05 05:00:00:00 Time of Pk Ch2
Register 06 000000.0 Total kVARh Del Ch3
Register 07 000000.0 Dmd Ch3 kVARh Del
Register 08 017000.0 Total kVARh Rec Ch4
Register 09 003000.0 Dmd Ch4 kVARh Rec
Alternate Registers
Register 10 00000000 Total kWh Del Ch1
Register 11 61600000.0 Pk Dmd Ch1 kWh Del
Register 12 12:00:00:00 Time of Pk Ch1
Register 13 00000000 Total kWh Rec Ch2
Register 14 000000.0 Pk Dmd Ch2 kWh Rec
Register 15 00:00:00:00 Time of Pk Ch2
Close
Help

***A typical "Read Register" command from JEMRead***

## Load-Profile Setup

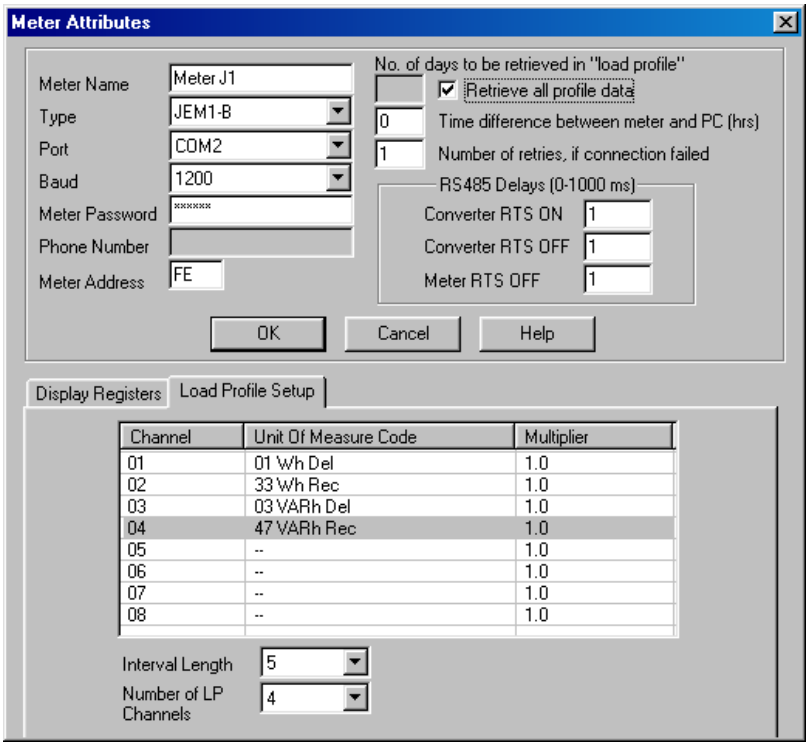
This screen displays the number of channels defined in the EXJSET Mass Memory settings under the Optional menu. The number of channels defined in EXJSET must match the number defined in *JEMRead* for the device.




***EXJSET Load-Profile (Mass Memory) Configuration***

Note: When updating the EXJ with new settings for the mass-memory queue size, number of load-profile channels, or load-profile interval length, the mass memory MUST be erased. Failure to do so will prevent load-profile data from being retrieved with *JEMRead*.

Each of the load profile channels in the configuration sheet must be defined in *JEMRead*.




***JEMRead Load-Profile Setup for EXJ***

**Channel**
The Channel is the Load Profile channel number.

**Unit of Measure Code**
The Unit-of-Measure entry must be assigned to define the channel. This is strictly a label used in the *JEMRead* reports. Use the up and down arrow keys to select the appropriate UOM code. Select a UOM code of "--" if there are no more assigned load profile channels.

**Multiplier**
This is the Load Profile pulse multiplier. The following formula should be used to enter the multiplier:

$$Multiplier = \frac{PTR \times CTR \times Ke}{1000}$$

Where:
PTR = potential transformer ratio
CTR = current transformer ratio
Ke = pulse constant
1000 = divider for kilo units; 1000000 should be used for mega units

**Interval Length**
Select the Load Profile interval length in minutes, as defined in EXJSET on the Mass-Memory setup under the Optional menu. Refer to the JEM-1 Configuration printout to determine this value. *This should not be confused with the demand interval length.*

**Number of LP Channels**
Enter the total number of Load Profile channels that are in the meter, as determined from the JEM-1 configuration printout.

Once the Meter Attributes screen is complete, you should be able to connect to the meter and read data. Proceed to the Manual Retrieval section of this book to begin the connection process.

# MANUAL RETRIEVAL OF METER DATA

Note: To retrieve data, you must have Meter Attributes and Communication parameters set up. Refer to the previous section "Getting Started" if you have not already done so.

**Step 1: Connect to a meter**

Open the *JEMRead* application by double-clicking the program icon on your desktop. The Main window will appear, showing a list of all available meter connections. Highlight the meter in your list that you want to read by clicking once on the line item. Now go to Meter | Connect, or click the icon on the toolbar (see the illustration at right). When the connection is established, a window will pop up and tell you "Meter Connected!" If you have trouble connecting, check the cable, and go back to the Meter Attributes window to verify that the communication parameters are correct.

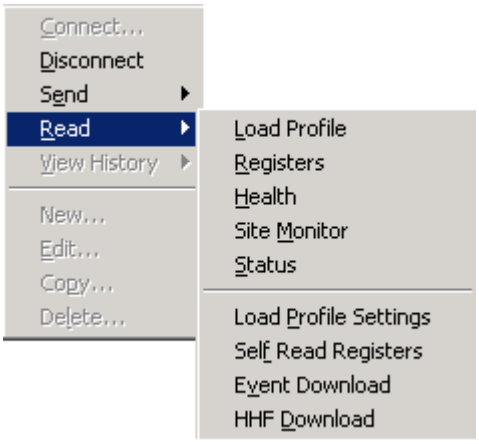
**Step 2: Get Information from the meter**

Once you are connected, you can access all the Read functions of the program. Go to the "Meter | Read" pull-down menu and then select the function you want to perform. Each choice is described below.

**Tip:** You can use the toolbar icons to select these functions directly without going to the pull-down menu. They are shown in the following descriptions in the right hand column. The icons are enabled after a meter is successfully connected.

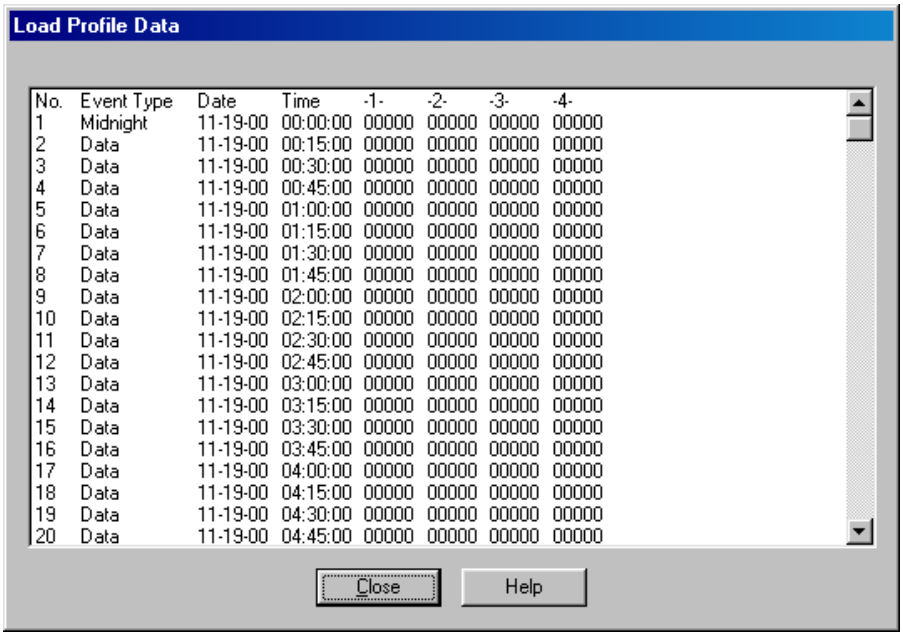
### Meter | Read

The Read menu branches into the submenu shown. Select the type of data that you want to read from the meter. This choice is only available when you are connected to a meter.



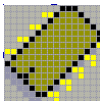

### Read | Load Profile

Click on this menu to retrieve the meter's Load Profile data. You must be connected to a meter first. The information is displayed as shown in the following example.

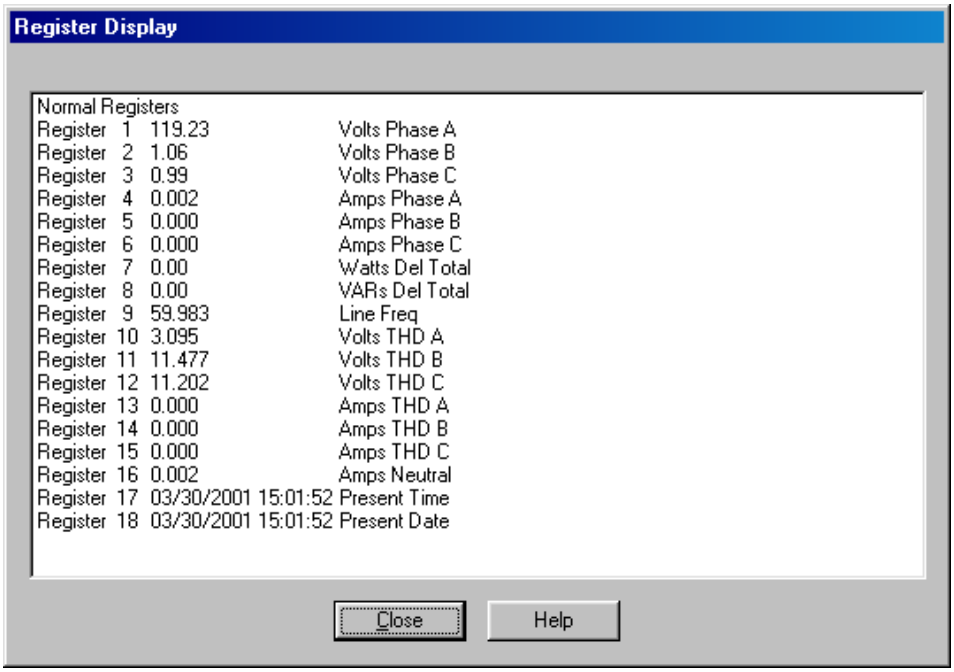



The vertical numbered column on the left indicates the consecutive Load Profile Intervals. Event Type indicates what information the interval contains. Date and Time indicates when the interval closed. The columns on the right indicate the Load Profile Channel number. The data in the columns indicate the measured electrical quantity that the channel has been configured to record, such as KWh.

### Read | Registers



Select this menu to transfer the data in the meter's storage registers *at the time of the last Freeze.* To get the register values at the present instant, a Freeze command should be performed first, and then the Read | Registers command.


Register Display
Normal Registers
Register 1 119.23 Volts Phase A
Register 2 1.06 Volts Phase B
Register 3 0.99 Volts Phase C
Register 4 0.002 Amps Phase A
Register 5 0.000 Amps Phase B
Register 6 0.000 Amps Phase C
Register 7 0.00 Watts Del Total
Register 8 0.00 VARs Del Total
Register 9 59.983 Line Freq
Register 10 3.095 Volts THD A
Register 11 11.477 Volts THD B
Register 12 11.202 Volts THD C
Register 13 0.000 Amps THD A
Register 14 0.000 Amps THD B
Register 15 0.000 Amps THD C
Register 16 0.002 Amps Neutral
Register 17 03/30/2001 15:01:52 Present Time
Register 18 03/30/2001 15:01:52 Present Date
Close
Help

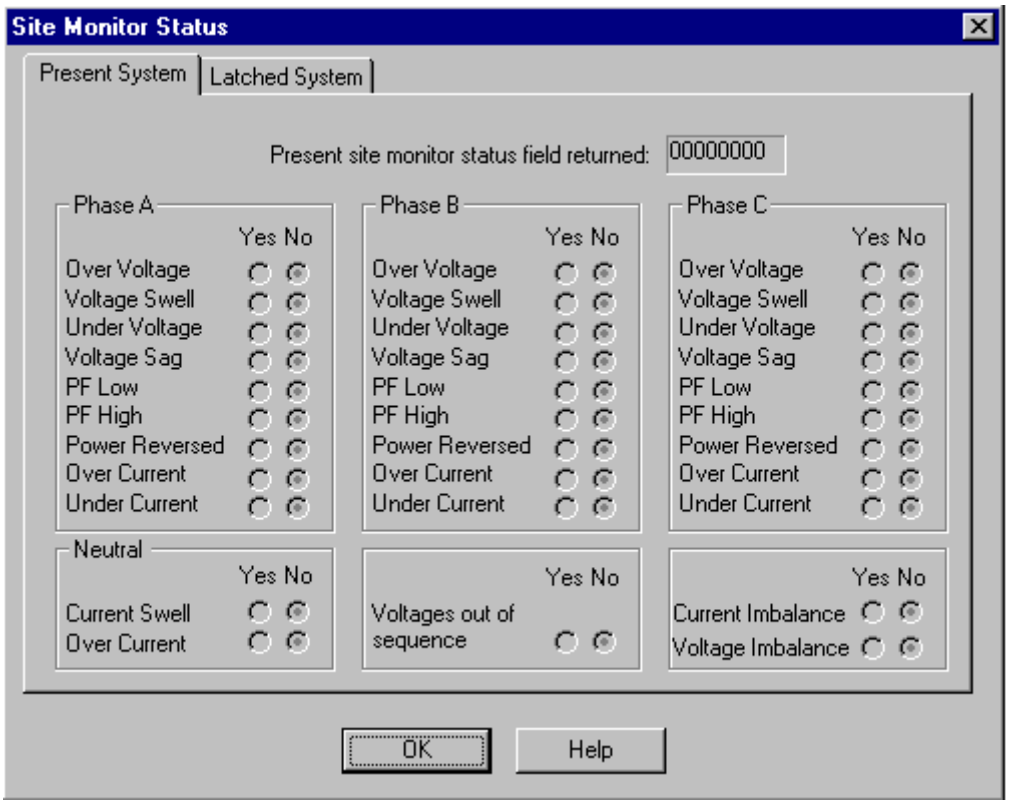
- **Performing a Freeze:** This menu choice will instruct the meter to take a snapshot of the data in the meter's registers at the instant you clicked on it. The meter then transfers the information to its communications buffer. You can then download the data to your PC by selecting Read | Registers. Note: The meter's actual registers will not be interrupted by a Freeze; they will continue to record data without interruption.

### Read | Health

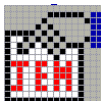
This feature displays a short summary of the meter's setup parameters along with the health status of the clock, battery, and other items.

### Read | Site Monitor

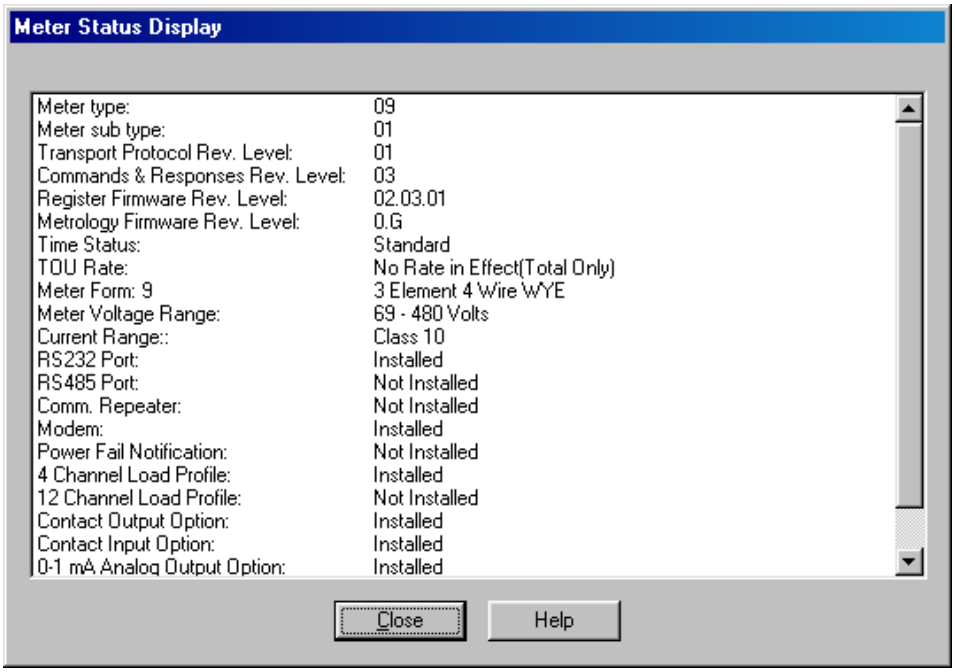
Downloads and displays Site Monitor Status information about the meter that is connected. A typical example is shown below.



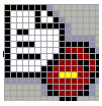
## Read | Status



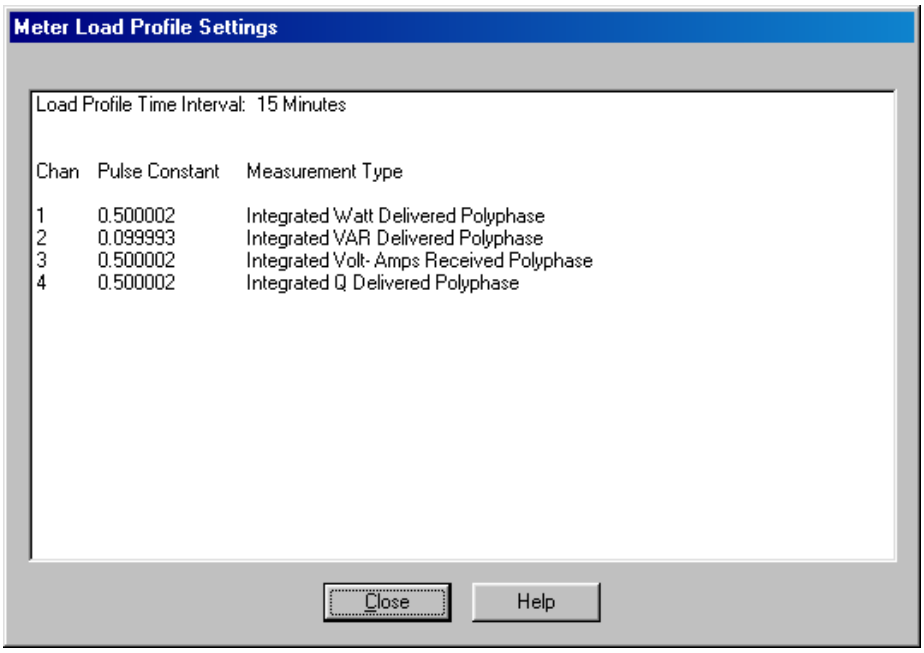
Downloads and displays new status information about the meter that is connected. A typical example is shown below.


Meter Status Display
Meter type: 09
Meter sub type: 01
Transport Protocol Rev. Level: 01
Commands & Responses Rev. Level: 03
Register Firmware Rev. Level: 02.03.01
Metrology Firmware Rev. Level: 0.G
Time Status: Standard
TOU Rate: No Rate in Effect(Total Only)
Meter Form: 9 3 Element 4 Wire WYE
Meter Voltage Range: 69 - 480 Volts
Current Range:: Class 10
RS232 Port: Installed
RS485 Port: Not Installed
Comm. Repeater: Not Installed
Modem: Installed
Power Fail Notification: Not Installed
4 Channel Load Profile: Installed
12 Channel Load Profile: Not Installed
Contact Output Option: Installed
Contact Input Option: Installed
0-1 mA Analog Output Option: Installed
Close
Help

## Read | Load Profile Settings



This will display how the meter has been configured for Load Profile parameters. Note that this is a view-only screen. To perform changes, you must do so with the *JemWare* or *JemSet* program (depending upon your meter type).

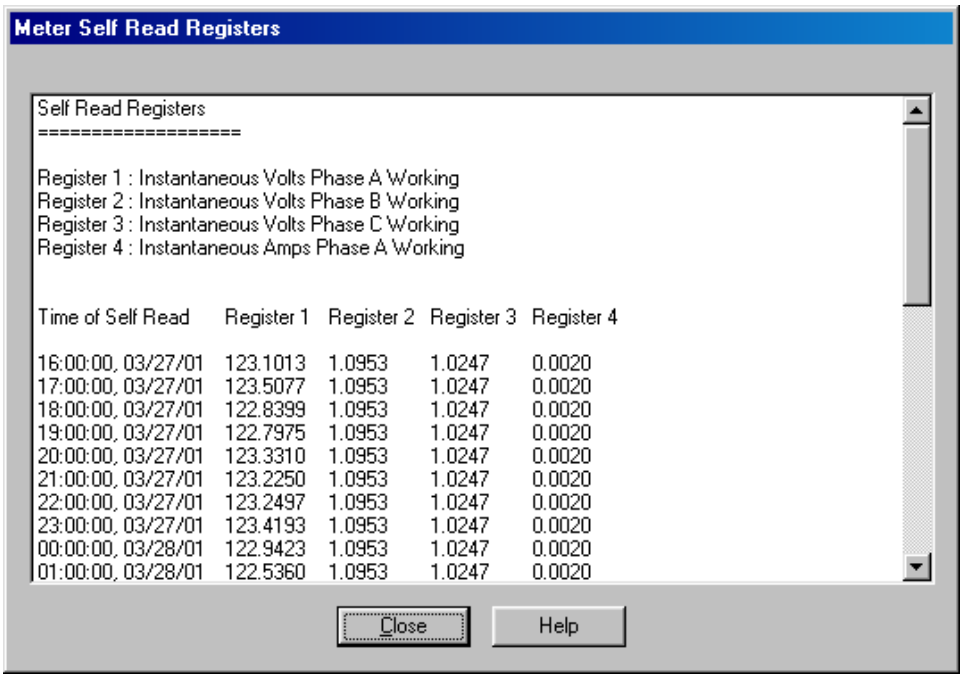

Meter Load Profile Settings
Load Profile Time Interval: 15 Minutes
Chan Pulse Constant Measurement Type
1 0.500002 Integrated Watt Delivered Polyphase
2 0.099993 Integrated VAR Delivered Polyphase
3 0.500002 Integrated Volt-Amps Received Polyphase
4 0.500002 Integrated Q Delivered Polyphase
Close
Help

### Read | Self Read Registers (JEMStar only)

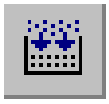
This feature will read and display data that is contained in the JEMStar's Self Read registers. The Self Read function can be used in a manner similar to Load Profile, whereby the meter can automatically read up to four registers on a user-selected schedule. To define the Self Read register parameters, refer to the JEMWare instruction manual 1083-602 under the Timekeeping menu for further information.

Note: Self Read registers should not be used as a *replacement* for Load Profile channels. Memory is very limited and these will only store up to two days of readings. Only the most recent 36 time periods are reported in *JEMRead*.

This is a view-only screen. You can print the information after reading it by disconnecting from the meter, and then going to File | Print | Selected Meter's Device Info.



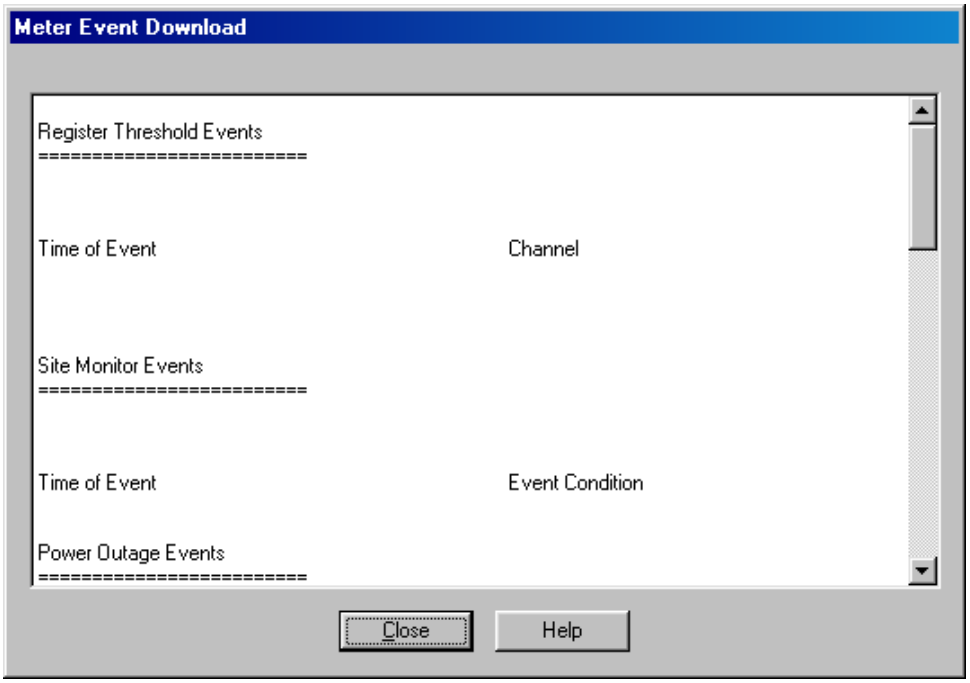
### Read | Event Download (JEMStar only)



The Event Download feature is used to view the time and date of occurrence for meter events such as:

- Threshold and Site Monitor alarms
- 3 most recent Power Fail alarms
- Meter time/date change
- Register Freeze
- Billing Period Reset
- Meter Configuration or Re-Configuration
- Password Attempt
- Voltage Sag / Swell Events

In addition to the time of the occurrence, other related information is displayed such as the source of the event or the condition causing the event.




### Read | HHF Download (JEMStar only)

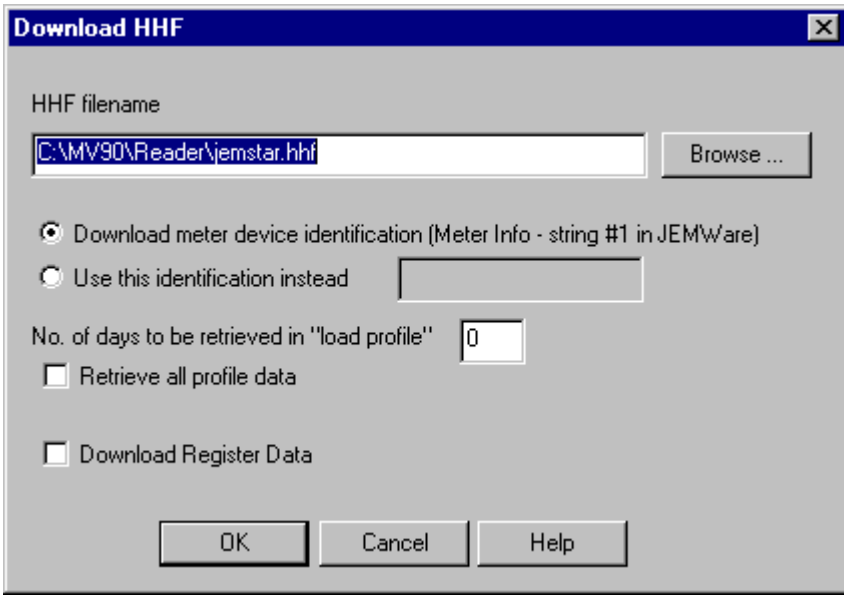
The HHF Download feature is used to create an HHF (Hand-held Format) file for use within MV-90®. MV-90® is a widely used software package that does such features as:

- Data Collection
- Data Validation
- Analysis

- Billing Management

In order to comply with this software package, *JEMRead* has the ability to manipulate its data in a format that is easily understood and imported into MV-90®.

To begin, select the menu option "Read | HHF Download" or choose the toolbar icon (seen above).




**Step 1:**
Select a location to create your HHF file to. The default location is where MV-90® expects to import HHF files from. You can either type in your location, or use the Browse button. ***NOTE:*** The directory must exist in order for *JEMRead* to create the file.

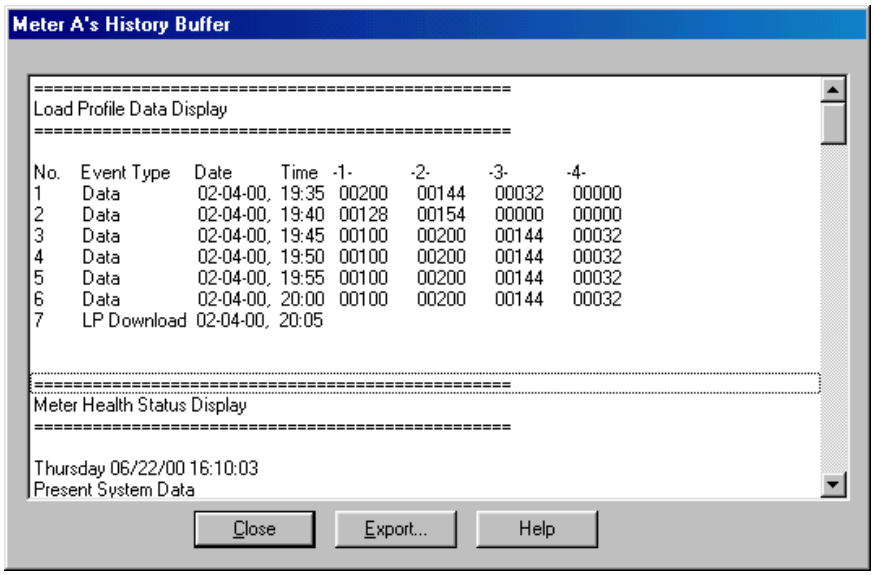
**Step 2:**
In order for the file to be properly imported into MV-90®, a unique identification string must be used. You can choose to allow *JEMRead* to download this ID automatically, or override this and enter your own. ***NOTE:*** This identification string is used as the "Master File" name in MV-90® and must be exact in order for the import to be successful. For more help, consult your MV-90® Instruction Manual.

**Step 3:**
Select the number of days of Load Profile you wish to be imported into MV-90®. Or choose to "Retrieve all profile data."

**Step 4:**
Select "Download Register Data" if you would like your display registers imported into MV-90® in an ASCII format.

**Step 3: View the data**

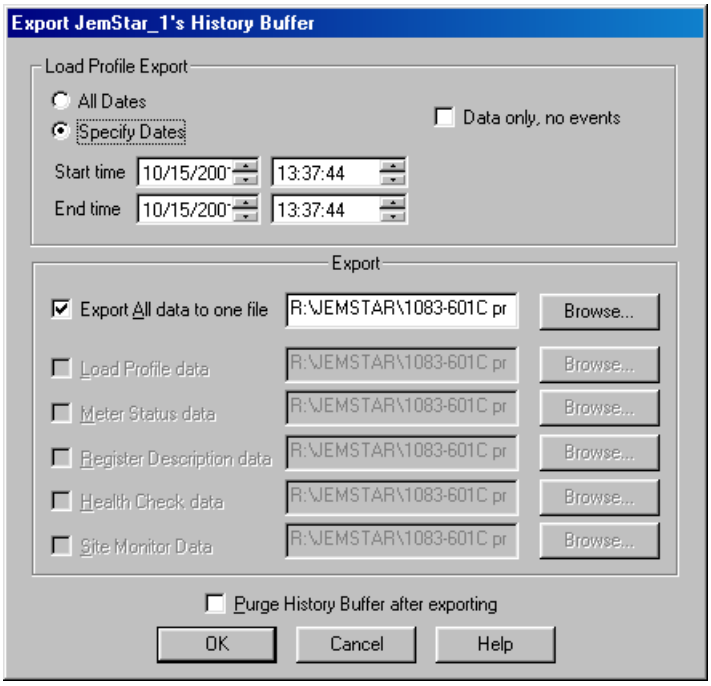
Now that you have the meter's data in your PC, you may view the information. From the Main window, highlight a meter and select the History button. You must Disconnect from the meter before this selection is available. The following window will appear.




Note: If any of the data are followed by an asterisk (*), it indicates an overflow has occurred and that data is invalid. The Ke value that was entered during JEMWare Load Profile configuration should be adjusted to correct this condition.

**Step 4: Export the data**

From the History window (above), you can export the data files into .csv format that can be read by MS Word™, Excel™, or any other applications that accept this format. Click the Export button to proceed to the following window.



*JEMRead* offers various ways to archive the data files. Referring to the 'Export' group box, you can save all the data to a single file by selecting the check box in the top line (as illustrated), or you can choose to separate and store the data in up to five categories: Load Profile, Meter Status, Registers, Health Checks, and Site Monitor (JEMStar only). Only the categories with valid stored meter data are made available for export. The data will be saved to the same folder where the *JEMRead* application is installed. Use Browse if you want to save data to a different folder on your PC.

## Warning!

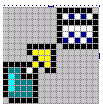
**Exporting the new data to an existing filename will delete the old data that was in that file. Use a new filename if you want to preserve the old data.**

The History Buffer will continue to accumulate data with each consecutive download unless you select the check box at the bottom of the window: "Purge History Buffer after Exporting".

Use the "Load Profile Export" group box to customize your Load Profile reporting:

- Click the "Data only, no events" check box to export just LP data with interval times. If the box is unchecked, the LP report will include event information such as Freeze, Status, and Health Check times, etc.
- Click the "All Dates" radio button to export all LP data in the History buffer, or
- Click the "Specify Dates" radio button to export only a certain time frame of data.

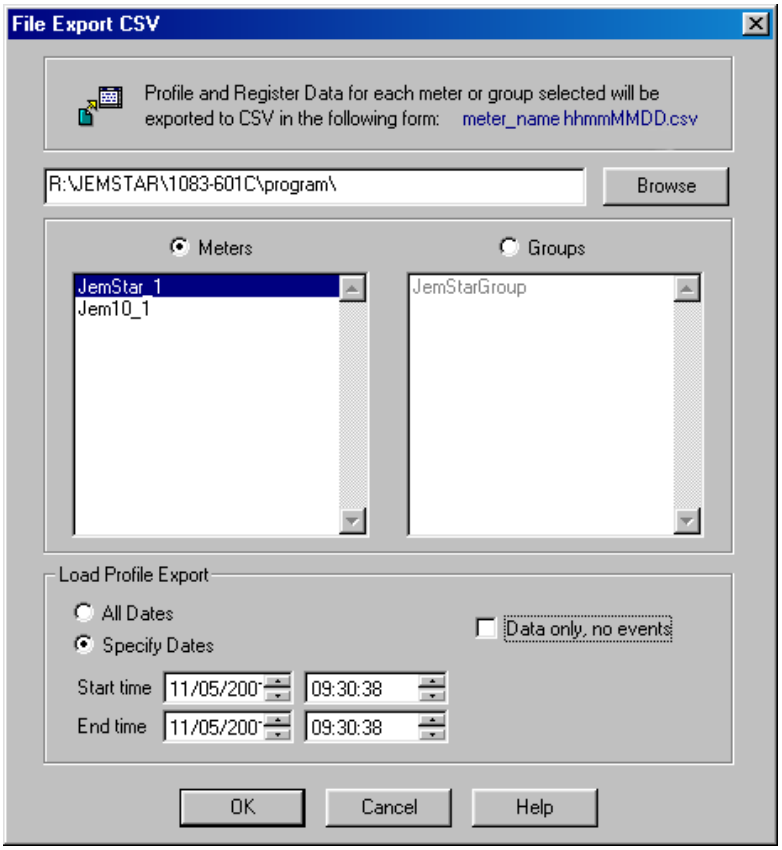
## Multiple Exports



There is also a feature to export data from several meters at once. From File | Export to CSV, you can select multiple meters that you want to export data from all at once. Alternately, you can select a *group* of meters if you want to export all the data from a defined group (see "Automatic Retrieval", next section). Use the Browse button to select a directory where the files are to be stored, or type in the path. Be sure that the path name ends with "\", or an error will occur and the files will automatically be stored in the JEMRead.exe directory.

Use the "Load Profile Export" group box to customize your Load Profile reporting:

- Click the "Data only, no events" check box to export just LP data with interval times. If the box is unchecked, the LP report will include event information such as Freeze, Status, and Health Check times, etc.
- Click the "All Dates" radio button to export all LP data in the History buffer, or
- Click the "Specify Dates" radio button to export only a certain period of data.




The file names are generated automatically using the name of the meter and a time and date stamp. **Only Load Profile data and Register data will be exported**, each to a separate file. For example, a meter named *MeterA* would generate the following two files: *MeterA*Reg12000102.csv and *MeterA*Prof12000102.csv, where the time and date is 12:00 pm (1200) on January 2 (0102).

A Group will be exported as its individual meter files, not as one large group file.
For example, Group 1, which may consist of three meters (Meter A, Meter B, and Meter C) would generate six files:
*MeterA*Reg12000102.csv
*MeterA*Prof12000102.csv
*MeterB*Reg12000102.csv
*MeterB*Prof12000102.csv
*MeterC*Reg12000102.csv
*MeterC*Prof12000102.csv

Note: If you want to export Health Check and Meter Status data, choose the History Button on the Main window, and then export each meter's data individually.

**Step 5: Open the saved file**
Once the .csv file is exported and saved in your computer's folder, you can open it with MS Word, Excel, or any other program that accepts this file extension. Use your application to create tables, charts, or diagrams for presenting the data. Archive and print the data in accordance with your company's requirements.

## *Sample Printout*

(As saved in MS Excel)

==========

Load Profile Data Display

==========

| No. | Event Type | Date | Time | -1- | -2- | -3- | -4- |
|---|---|---|---|---|---|---|---|
| 851 | Data | 11-20-00 | 13:15:00 | 0 | 0 | 0 | 0 |
| 852 | Data | 11-20-00 | 13:20:00 | 0 | 0 | 0 | 0 |
| 853 | Data | 11-20-00 | 13:25:00 | 20 | 0 | 25 | 0 |
| 854 | Test Mode | 11-20-00 | 13:25:36 | 5 | 0 | 5 | 0 |
| 855 | Test Mode End | 11-20-00 | 13:26:13 | | | | |
| 856 | Time Set | 11-20-00 | 13:28:55 | 19 | 0 | 24 | 0 |
| 857 | Time Set End | 11-20-00 | 23:54:52 | | | | |
| 858 | Data | 11-20-00 | 23:55:00 | 1 | 0 | 1 | 0 |
| 859 | Midnight | 11-21-00 | 00:00:00 | 37 | 0 | 47 | 0 |
| 860 | Data | 11-21-00 | 00:05:00 | 42 | 0 | 52 | 0 |
| 861 | Test Mode | 11-21-00 | 00:08:02 | 26 | 0 | 32 | 0 |
| 862 | Test Mode End | 11-21-00 | 00:10:53 | | | | |
| 863 | Data | 11-21-00 | 00:15:00 | 29 | 0 | 37 | 0 |
| 864 | Power Failure | 11-21-00 | 00:15:52 | 6 | 0 | 7 | 0 |
| 865 | Power Failure End | 11-21-00 | 00:17:14 | | | | |
| 866 | Data | 11-21-00 | 00:20:00 | 19 | 0 | 24 | 0 |
| 867 | Data | 11-21-00 | 00:25:00 | 35 | 0 | 44 | 0 |
| 868 | Data | 11-21-00 | 00:30:00 | 35 | 0 | 44 | 0 |
| 869 | Data | 11-21-00 | 00:35:00 | 36 | 0 | 44 | 0 |
| 870 | Data | 11-21-00 | 00:40:00 | 35 | 0 | 43 | 0 |
| 871 | Billing Reset | 11-21-00 | 00:40:51 | 6 | 0 | 8 | 0 |
| 872 | Data | 11-21-00 | 00:45:00 | 29 | 0 | 36 | 0 |
| 873 | LP Download | 11-21-00 | 00:45:08 | | | | |

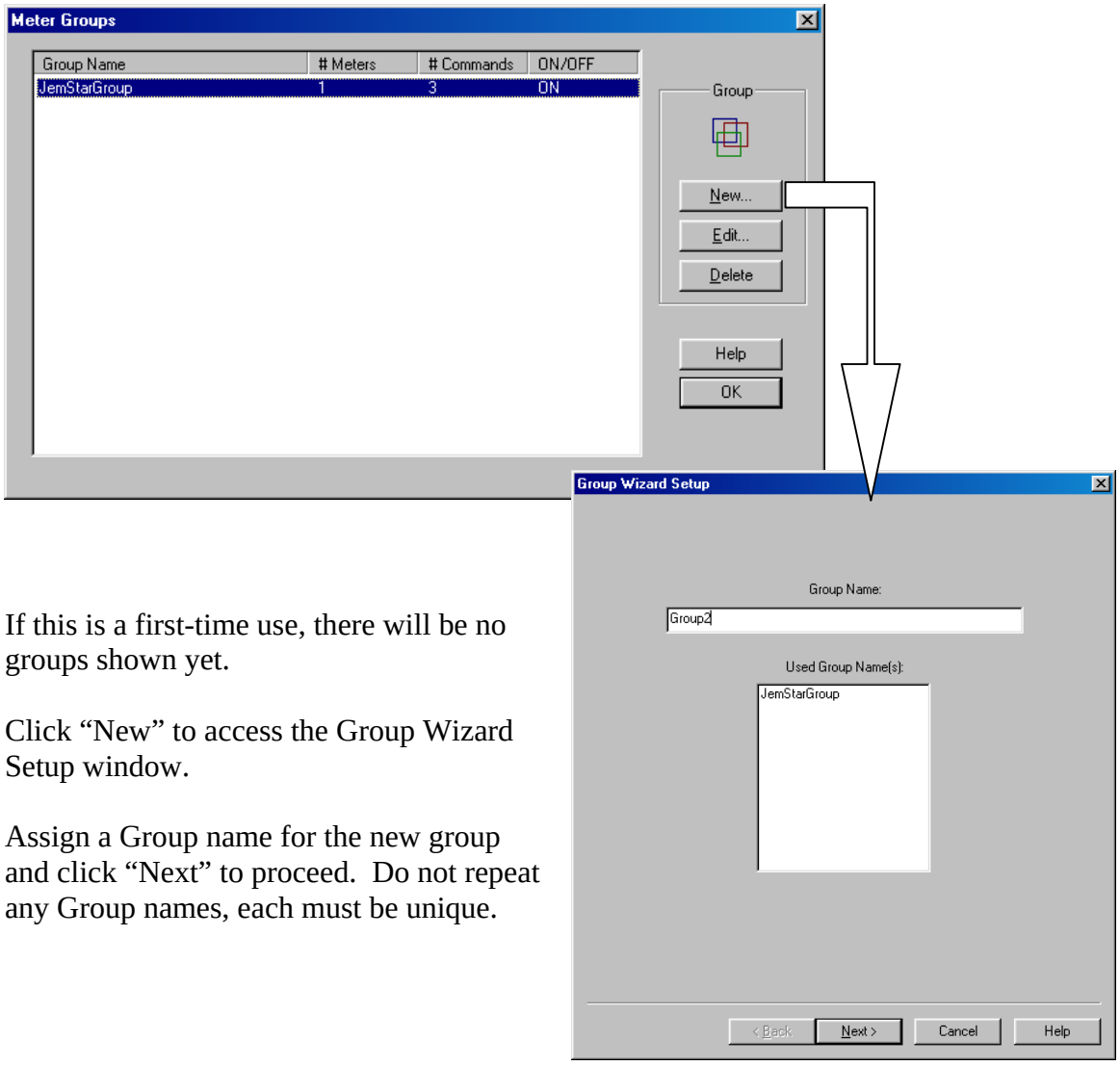
# AUTOMATIC RETRIEVAL OF METER DATA

Note: To retrieve data, you must have Meter Attributes and communication parameters set up. Refer to the earlier section "Getting Started" if you have not already done so.

In order to download data automatically from a meter (or network of meters), you must first create a "Group" in *JEMRead*, and then set up a time schedule for the operations you want to perform.

**Step 1: Create a Group for your meter(s)**
The Group function allows you to customize your download and print commands specific for each group. Note that a Group can consist of only a single meter or multiple meters.

From the Main window, click on the Groups button, and the Meter Groups window is displayed as shown below.

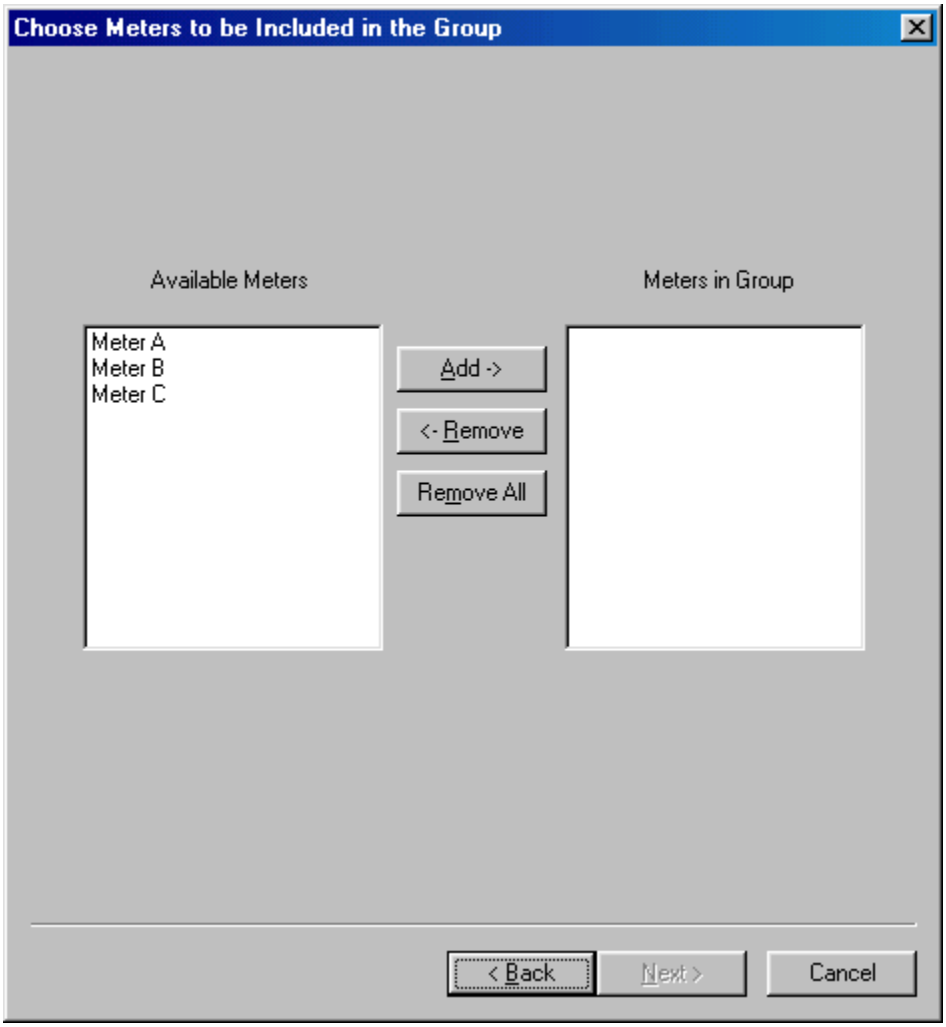



If this is a first-time use, there will be no groups shown yet.

Click "New" to access the Group Wizard Setup window.

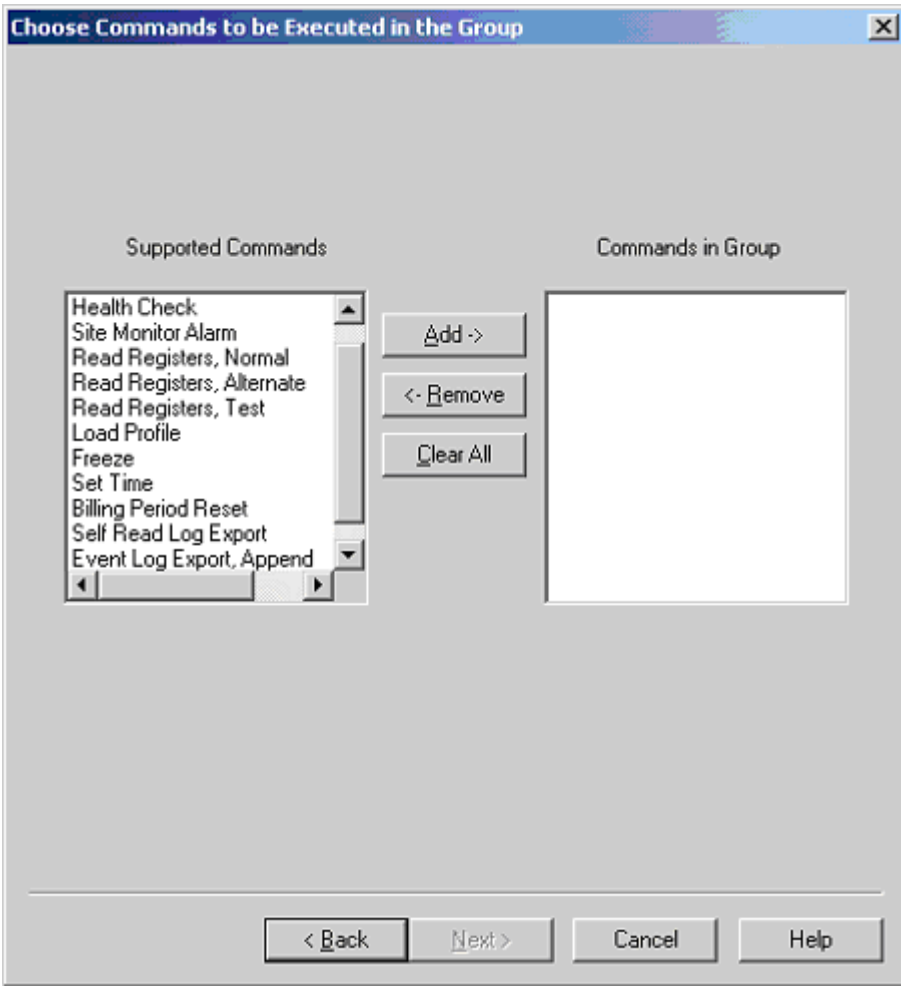
Assign a Group name for the new group and click "Next" to proceed. Do not repeat any Group names, each must be unique.

Configure your new Group by first highlighting a meter from the left column “Available Meters”, then click the “Add” button to add it to the right column “Meters in Group”. Repeat this procedure for each meter you want to include in the Group. If you want to delete a meter from the Group, highlight it in the right column and click Remove. The Remove All button will move all meters in the right column back to the left. Note: The meters in the list are only removed from the *group*; they are still available for future use.

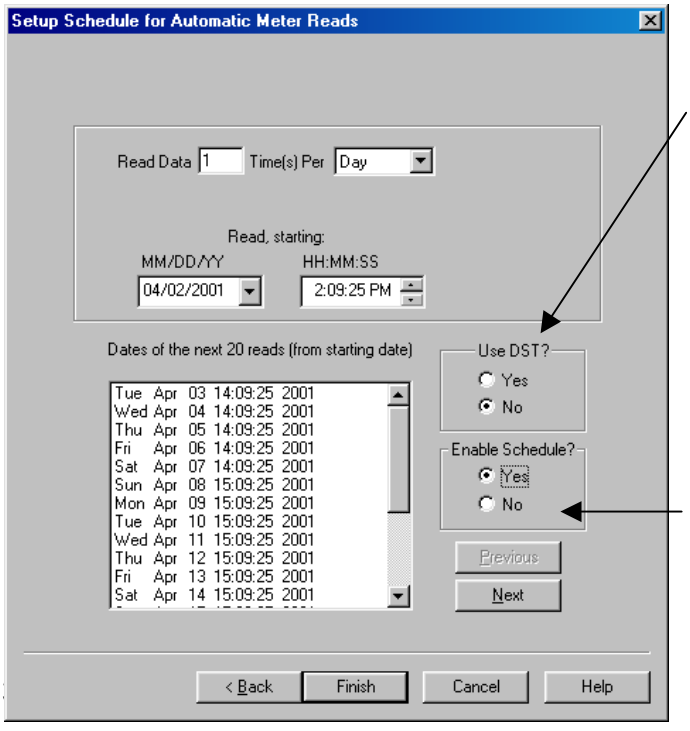



Click Next to continue.

The next step is to assign commands for the specified Group. This will decide what data is retrieved and which operations are to be performed during an Automatic Read. Choose from the list of Supported Commands those that you want performed. The commands will be executed in the order you list them, top to bottom. In the following example, a Freeze will be performed first, then Meter Status, Read Registers, Load Profile, with a BPR as the last command. Click Next to proceed.




The last step is to create a time schedule for when the automatic readings will take place. Select the frequency of readings (hourly, daily, weekly, monthly, or yearly), and the day of the week (if applicable). You can also select the exact day and time when the reading will start and whether you want to use DST (Daylight Savings Time).

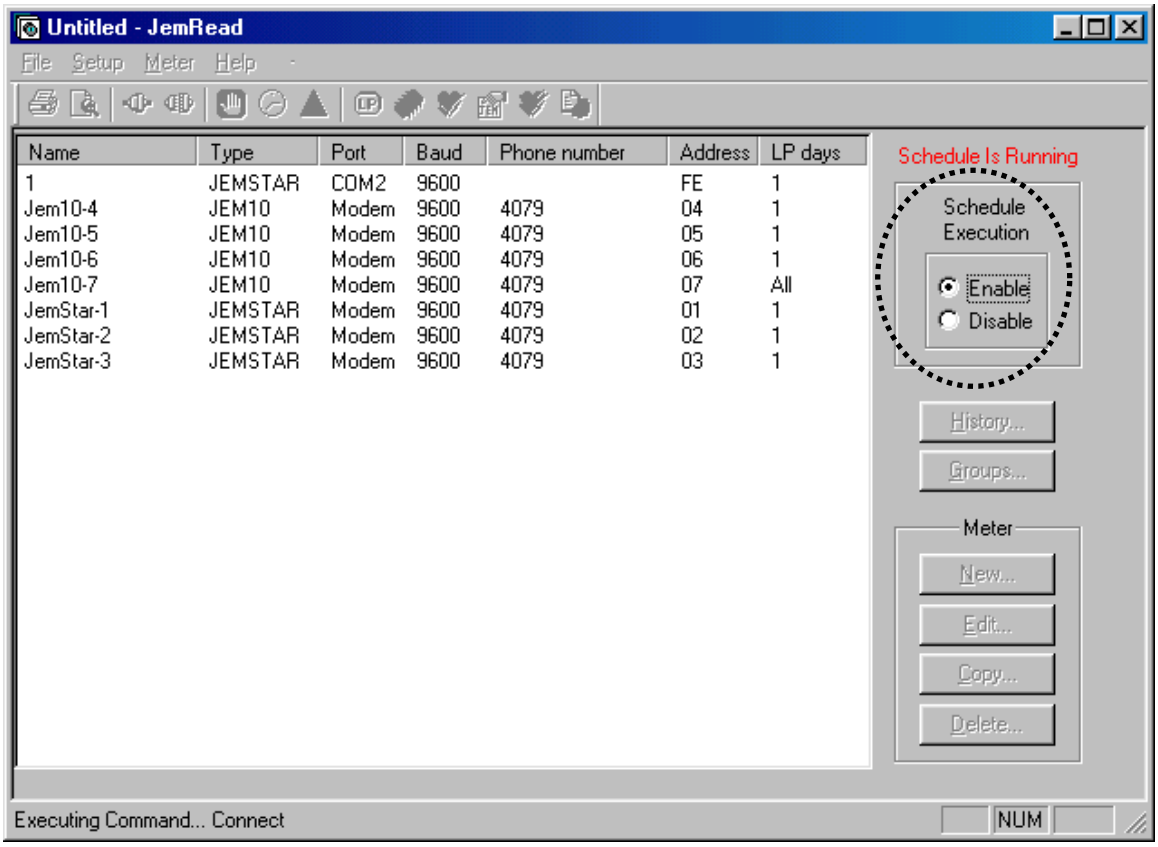



***In order to use DST, Daylight Savings Time must also be enabled on your PC clock. Check your Windows Help system for assistance if you are not familiar with this procedure.***

If you want this Group to run as part of the Automatic Schedule, click Yes. To disable just this Group, click No.

Click Finish to complete the Group setup.

When the Group is properly configured, return to the Main Menu. In the Schedule Execution box on the right side of the window, make sure that you check the Enable button when you are done. This will start the automatic download schedule that you have just configured.




A red, blinking notice "Schedule is Running" will appear to indicate that the automatic schedule routine is activated. You must keep the program open on your computer as long as you want the schedule to run and continue downloading data. If continuous operation creates a concern, the program can be launched remotely with a command line option. This allows third party scheduling software to launch the program at a specific time so the scheduled read can take place.

*Example:*
*JEMRead* is scheduled to read a group of meters at 13:00 on the first day of each month. Using your third party software, generate a command line at 12:50 on the first day of the month. Define the path where the program executable is located and include your password:

C:\jemread\jemread.exe\<password>

*JEMRead* will start up, perform the automatic read, and download the data per the schedule. Note that you cannot use this feature to turn off *JEMRead*.

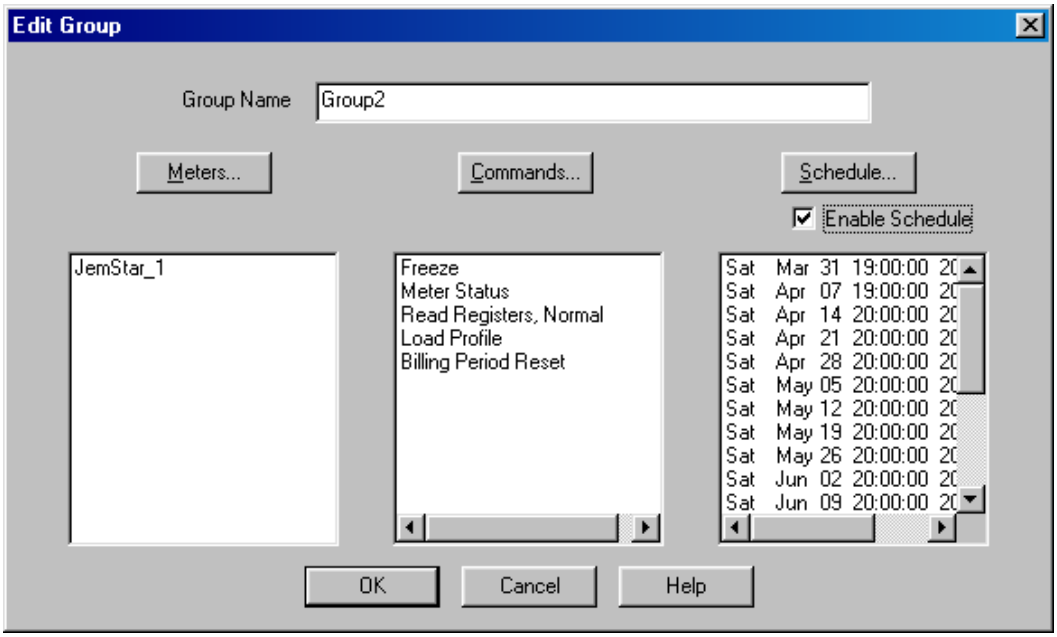
***IMPORTANT: You can only access the setup menus and buttons when the "Schedule Execution" button is Disabled.***

## Editing a Group

Once the Groups are formed for Automatic Retrieval, you may want to add or delete meters, or change the retrieval schedule. *JEMRead* offers easy access to the existing Groups so that you can change any of the settable parameters.

**To Edit an existing Group:**

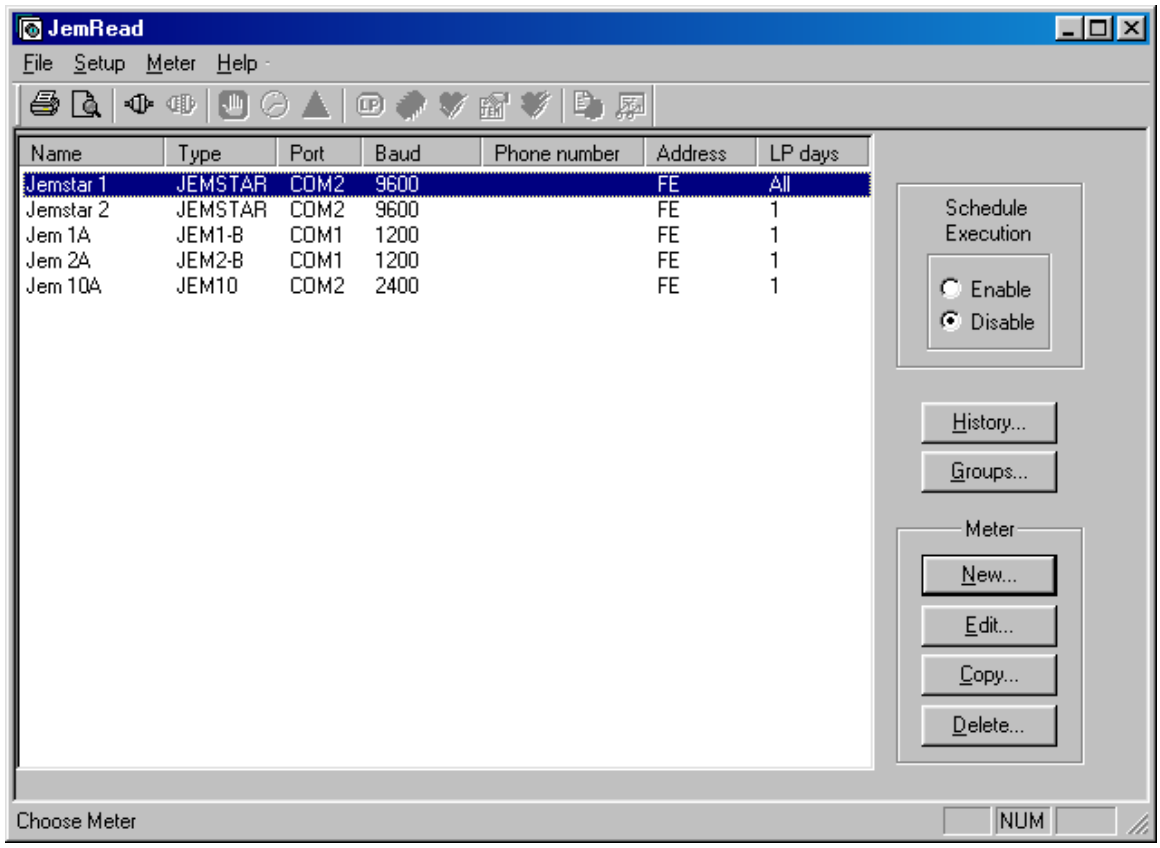
1. If the Automatic Schedule is currently running (on the Main Menu), click Disable under the Schedule Execution box to turn it off.
2. From the Main menu, click the Groups button and then highlight the Group to be edited in the listing.
3. Click the Edit button, and the Edit Group window will appear as shown below.




4. From this window, you can make changes to any scheduling parameters:
   - Use the Meters button to add or delete meters in the Group.
   - Use the Commands button to instruct *JEMRead* to add or delete download functions.
   - Use the Schedule button to change the Automatic Download time or date.
   - The Enable Schedule box must be checked to include this Group in the running schedule. You can deselect this box if you want the schedule to run *without* this particular Group.
5. Click OK after your changes are made, to return to the Main menu. Note that any Groups you deselected from the schedule in the Edit Groups window will be labeled "OFF", and will not run with the rest of the scheduled Groups.
6. Be sure to click the Enable button under Schedule Execution in the Main window, to run the Automatic Schedule.

# MENU DESCRIPTIONS

When you open the *JEMRead* program, the following Main window will appear. You can access all functions from the pull-down menus at the top of the window. For your convenience, buttons are provided at the right side of the Main window to quickly make edits, additions, deletions, etc.



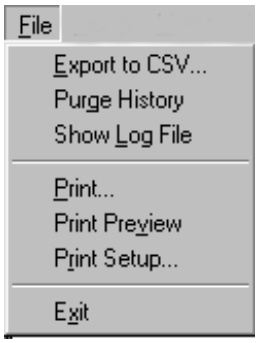

If this is a new installation, there will not be any meters shown. The buttons in the "Meter" group box on the right side of the window are used to enter new meter setups or edit the parameters of existing ones. The History and Groups buttons mimic the pull down menus, and they can be used as a shortcut to these features.

Click the Heading buttons (Name, Type, Port, Baud, etc.) to sort a list of meters. For example, click the Name heading to arrange the meter names alphabetically.

The Schedule Execution group box provides an easy way to turn the automatic scheduling on or off. When the Enable button is selected, the auto-schedule is running and will automatically download data from meters according to your custom setup.

**You must *disable* the Schedule Execution to gain access to any of the *JEMRead* setup functions.**

# FILE MENU




The File Menu provides features to save and print your meter data.

### File | Export to… CSV

Once you have downloaded data files into JEMRead from a meter, use this feature to create a **.csv** format file. This can then be read by other applications such as MS Word™ or Excel™.

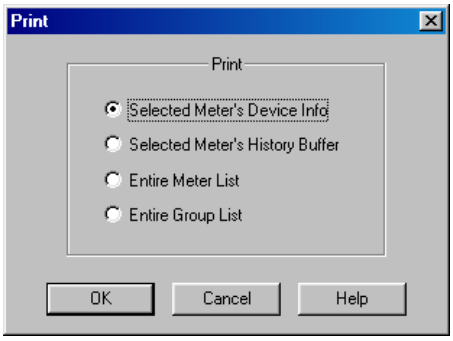
### File | Purge History

Deletes all the data in the History file for the highlighted meter.

### File I Show Log File

The Log file is a record of meter parameters such as command executions that are stored for test purposes. This data can be used for troubleshooting, but is not ordinarily used as meter records.

### File | Print




Any of four categories of data can be printed directly from JEMRead.

- *Selected Meter's Device Info* prints the meter name, meter type, baud rate, Load Profile settings; it also includes a list of display and self-read registers that have been read (if any).
- *Selected Meter's History Buffer* prints all the history data of a meter, including Load Profile information. This is an alternate method of printing the data if you do not want to export the data to a spreadsheet. The History Buffer could comprise a very large file if you have the program set to accumulate data, and may take the program several minutes to format it for printing.
- *Entire Meter List* prints all the information you normally see in the Main screen pertaining to the meter setups.
- *Entire Group List* prints all the meter groups and the number of meters in each group.

### File | Print Preview

Allows the user to view the information exactly as it will appear on the printout. Standard Windows™ function.

### File | Print Setup

Standard Windows printer configuration screen.

### File | Exit (Alt+F4)

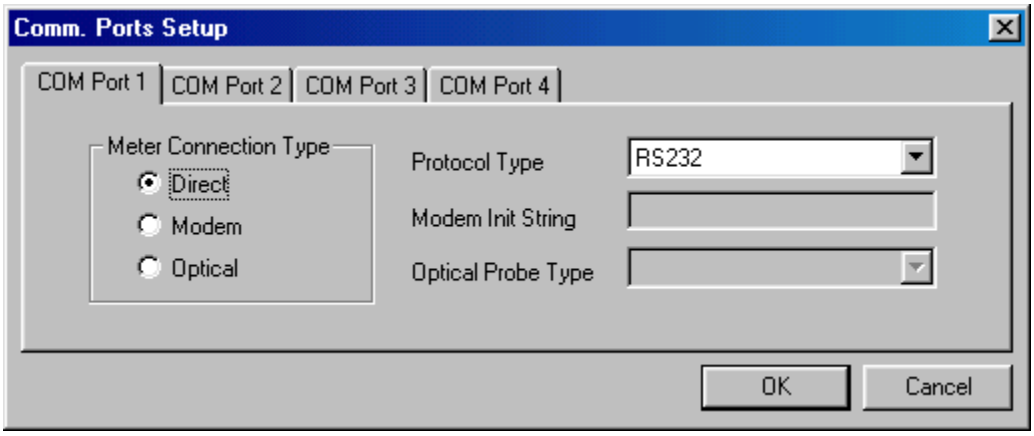
Exits the application. If you have unsaved information, you will be prompted to save it before you close *JEMRead.*

# SETUP MENU

The Setup menu includes parameters that must be configured for the program to operate properly.

### Setup | Com Ports…

Use this menu selection to choose a serial port on your computer that will communicate with the meters. Your choices are COM1 through COM4.




You must also select whether your communication is Direct Connect, Optical Coupler, or via a modem.

**Direct**

Use this setting if you are connecting with a standard RS-232 or RS-485 serial communications cable. The signals are available on the meter's pigtail cable and should be terminated with an appropriate connector for your application. Refer to the meter's User Manual for the cable color code and signal functions. Note: If RS-485 is selected, you will need to insert RTS delay times in the Meter Attributes window.

**Optical**

Use this setting if you are connecting with a Scientific Columbus™ Model 5282 Optical Coupler or GE Smart Coupler™. These pickups use a quick-connect magnetic attachment to the front of the meter, and the globe can remain attached during communications. Consult the manuals provided with these devices for operating instructions.

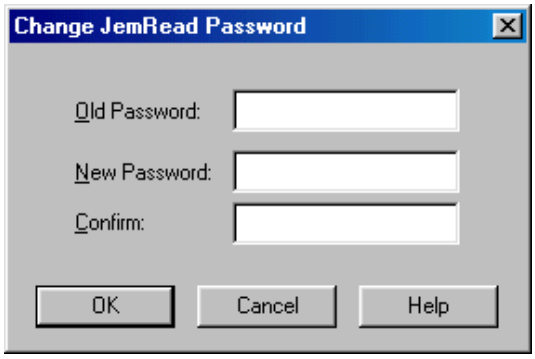
**Modem**

Use this setting if you are connecting with a dial-up modem. The meter supports the generic Hayes command set, and will accept a Modem Initialization String of up to 100 characters. The default init string "ATZ" is provided and may be sufficient to establish communications. Consult your modem's instruction manual for further information on initialization strings.

### Setup | Groups…

You must set up "Groups" of meters to use the automatic download functions. A Group can consist of one or more meters, and it will be arranged to have all the same download parameters. For example, Group 1 may be arranged with four meters that are all configured to download Load Profile data, and then perform a Billing Period Reset. Group 2 may just be one meter configured for a Health Check. The automatic feature will proceed from one Group to the next, performing only the functions that are customized for each particular Group. Refer to the "Configuring Automatic Retrieval" section of this manual for a complete description of the Group setup procedure.

### Setup | Password…




If you have registered your copy of *JEMRead*, you will be asked for a password as soon as you open the application. Once you enter your password, you will have access to the program. The default password "1" is required for first-time/demo users. You can now go to the Change Password menu if you want to customize your password. Enter the old password (the one you used to enter the program), and then enter a new password. Re-enter the new password in the Confirm line, then click OK to have the program accept the change.

# METER MENU

The Meter menu is a list of commands that you can use to obtain meter data.

### Meter | Connect

Use to initiate a communication link with a meter. Either use the pull-down menu or click the toolbar icon.

### Meter | Disconnect

Use to terminate a communication link with a meter. Either use the pull-down menu or click the toolbar icon.

### Meter | Send

This menu item branches into the submenu shown. Use this to send commands instantly to a connected meter. This is only available when you are connected to a meter.

#### Register Freeze

Clicking this menu choice will take a snapshot of the data in the meter's working registers at the instant you clicked on it, and then transfer the information to the meter's freeze buffer. You can download the data with *JEMRead* by selecting menus such as Meter | Read | Load Profile, etc. Note: The actual meter registers will not be interrupted by a Freeze; they will continue to record data without interruption.

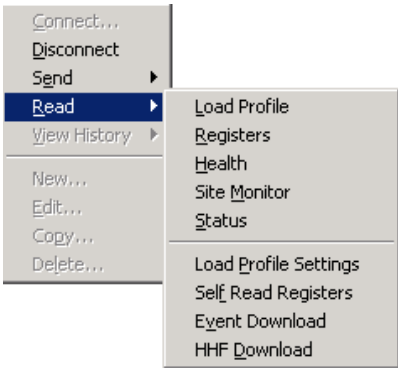
#### New Meter Time

This is used to set the time and date of the meter's internal clock. JEMRead will update the highlighted meter with the time and date from your PC's clock. The program will also take the time zone difference into account (if any).

#### Billing Period Reset

This command will transfer the contents of the working registers into the storage registers of the meter. This is also called a Demand Reset.

### Meter | Read

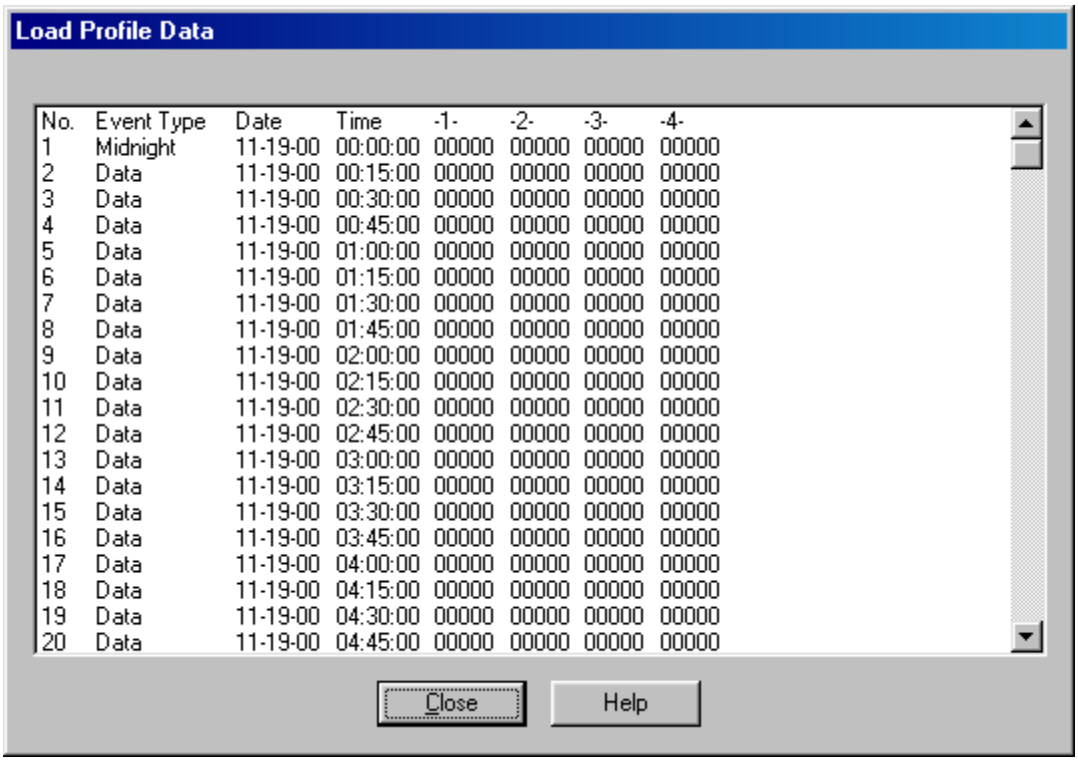



This menu item branches into the submenu shown. Use this to read data directly from a meter. This choice is only available once you are connected to a meter.

To print any of the "Read" information, disconnect from the meter, go to File | Print, and then choose "Selected Meter's History Buffer".

### Read | Load Profile

Click on this menu to retrieve the meter's Load Profile data. You must be connected to a meter first. The information is displayed as shown in the example below.




| No. | Event Type | Date | Time | -1- | -2- | -3- | -4- |
|---|---|---|---|---|---|---|---|
| 1 | Midnight | 11-19-00 | 00:00:00 | 00000 | 00000 | 00000 | 00000 |
| 2 | Data | 11-19-00 | 00:15:00 | 00000 | 00000 | 00000 | 00000 |
| 3 | Data | 11-19-00 | 00:30:00 | 00000 | 00000 | 00000 | 00000 |
| 4 | Data | 11-19-00 | 00:45:00 | 00000 | 00000 | 00000 | 00000 |
| 5 | Data | 11-19-00 | 01:00:00 | 00000 | 00000 | 00000 | 00000 |
| 6 | Data | 11-19-00 | 01:15:00 | 00000 | 00000 | 00000 | 00000 |
| 7 | Data | 11-19-00 | 01:30:00 | 00000 | 00000 | 00000 | 00000 |
| 8 | Data | 11-19-00 | 01:45:00 | 00000 | 00000 | 00000 | 00000 |
| 9 | Data | 11-19-00 | 02:00:00 | 00000 | 00000 | 00000 | 00000 |
| 10 | Data | 11-19-00 | 02:15:00 | 00000 | 00000 | 00000 | 00000 |
| 11 | Data | 11-19-00 | 02:30:00 | 00000 | 00000 | 00000 | 00000 |
| 12 | Data | 11-19-00 | 02:45:00 | 00000 | 00000 | 00000 | 00000 |
| 13 | Data | 11-19-00 | 03:00:00 | 00000 | 00000 | 00000 | 00000 |
| 14 | Data | 11-19-00 | 03:15:00 | 00000 | 00000 | 00000 | 00000 |
| 15 | Data | 11-19-00 | 03:30:00 | 00000 | 00000 | 00000 | 00000 |
| 16 | Data | 11-19-00 | 03:45:00 | 00000 | 00000 | 00000 | 00000 |
| 17 | Data | 11-19-00 | 04:00:00 | 00000 | 00000 | 00000 | 00000 |
| 18 | Data | 11-19-00 | 04:15:00 | 00000 | 00000 | 00000 | 00000 |
| 19 | Data | 11-19-00 | 04:30:00 | 00000 | 00000 | 00000 | 00000 |
| 20 | Data | 11-19-00 | 04:45:00 | 00000 | 00000 | 00000 | 00000 |

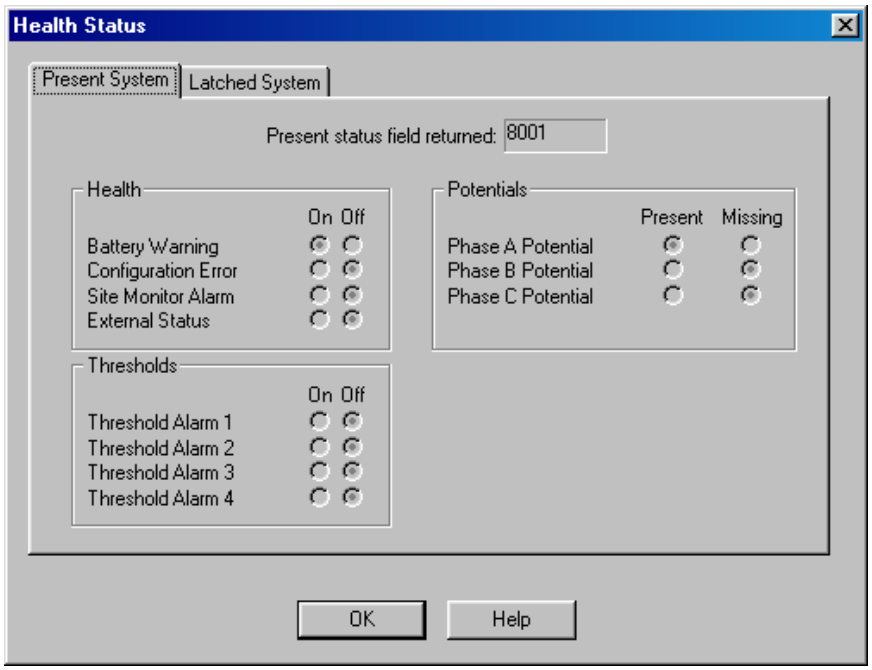
The vertical numbered column on the left indicates the consecutive Load Profile events. Event Type provides a description of the information. Date and Time indicates when the interval closed. The columns on the right indicate the Load Profile Channel number. The data in the columns indicate the measured electrical quantity that the channel has been configured to record, such as KWh. To determine the units for a particular channel, go to Read | Load Profile Settings.

### Read | Registers

Select this menu to transfer the data in the meter's storage registers *at the time of the last Freeze*. To get the register values at the present instant, a Freeze command should be performed first, and then a Download Registers Data command.

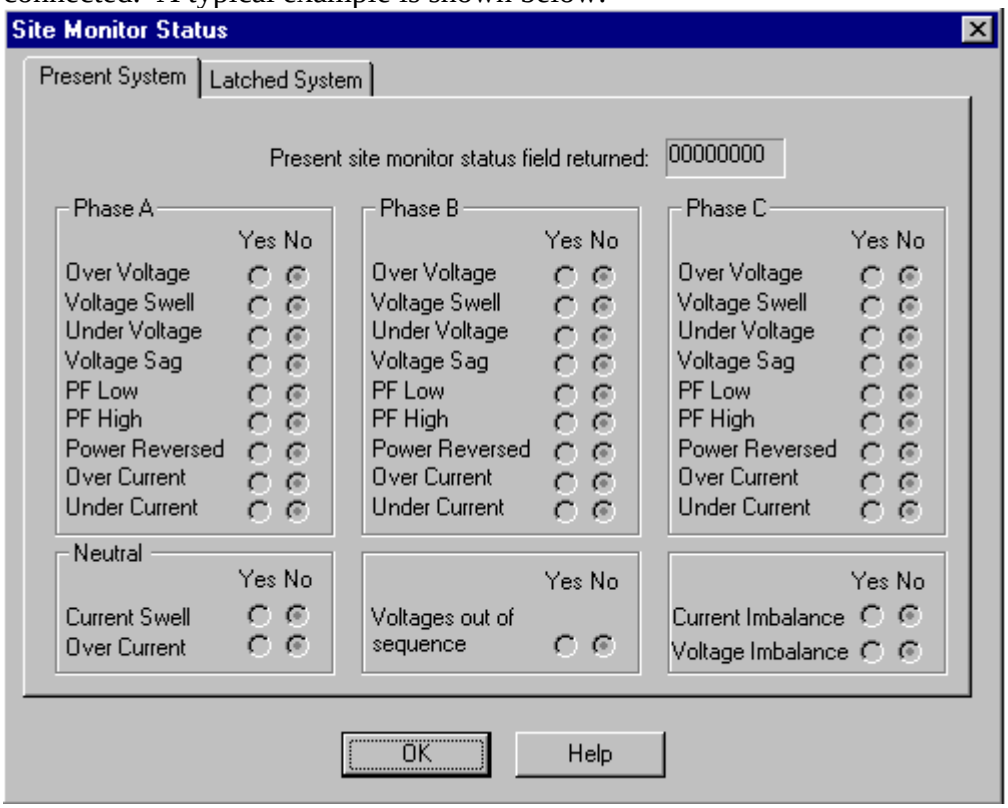
### Read | Health

This feature displays a short summary of the meter's setup parameters along with the health status of the clock, battery, and other items.



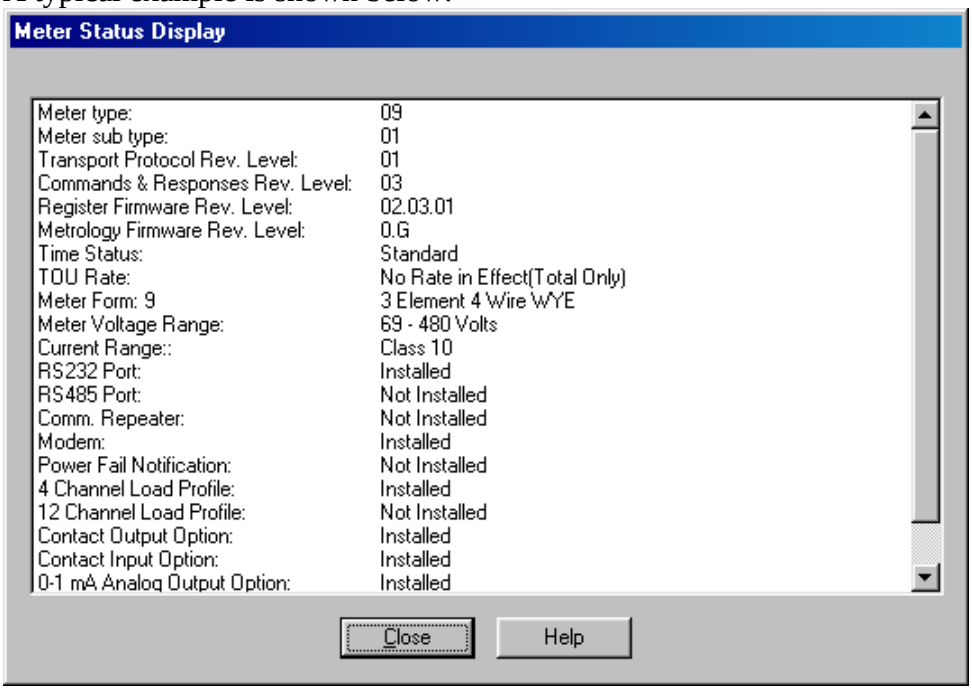
## Read | Site Monitor (JEMStar only)

Downloads and displays Site Monitor status information about the meter that is connected. A typical example is shown below.



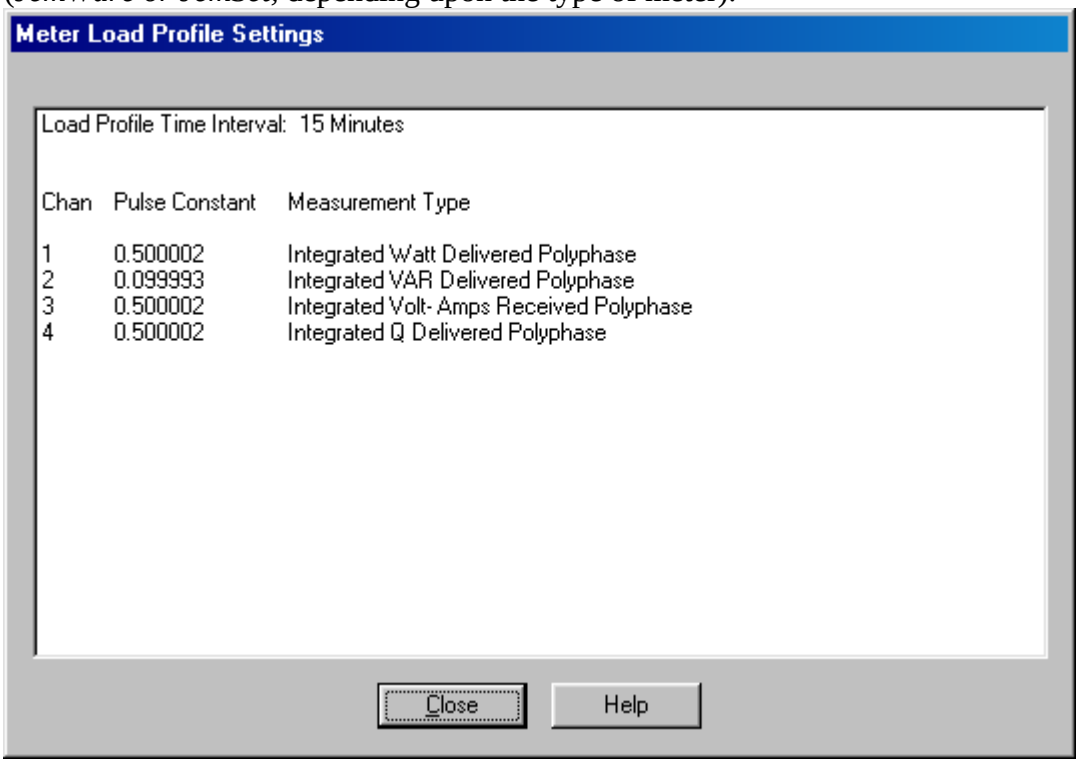

## Read | Status

Downloads and displays new status information about the meter that is connected. A typical example is shown below.


Meter Status Display
Meter type: 09
Meter sub type: 01
Transport Protocol Rev. Level: 01
Commands & Responses Rev. Level: 03
Register Firmware Rev. Level: 02.03.01
Metrology Firmware Rev. Level: 0.G
Time Status: Standard
TOU Rate: No Rate in Effect(Total Only)
Meter Form: 9 3 Element 4 Wire WYE
Meter Voltage Range: 69 - 480 Volts
Current Range:: Class 10
RS232 Port: Installed
RS485 Port: Not Installed
Comm. Repeater: Not Installed
Modem: Installed
Power Fail Notification: Not Installed
4 Channel Load Profile: Installed
12 Channel Load Profile: Not Installed
Contact Output Option: Installed
Contact Input Option: Installed
0-1 mA Analog Output Option: Installed
Close
Help

### Read | Load Profile Settings (JEMStar, JEM10 only)

This will read and display how the meter has been configured for Load Profile parameters. Note that this is a view-only screen. You can print the information by disconnecting and going to File | Print | Selected Meter's Device Info. To perform changes, you must do so with your meter's configuration program (*JemWare or JemSet*, depending upon the type of meter).

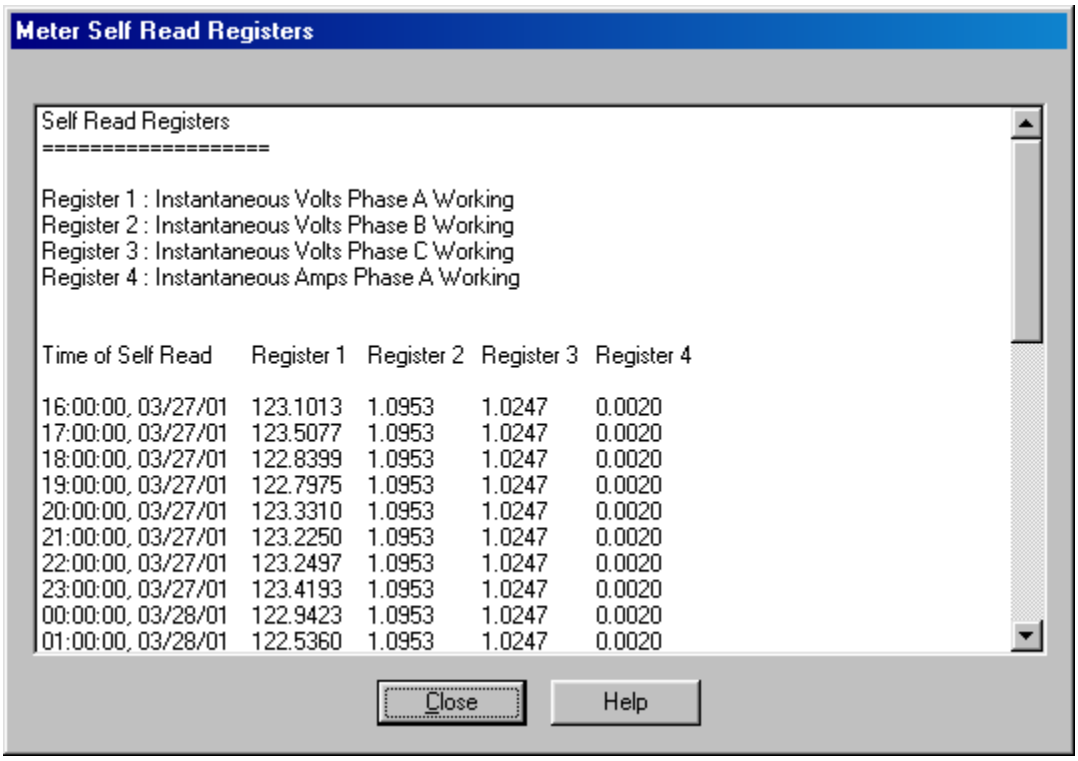

Meter Load Profile Settings
Load Profile Time Interval: 15 Minutes
Chan Pulse Constant Measurement Type
1 0.500002 Integrated Watt Delivered Polyphase
2 0.099993 Integrated VAR Delivered Polyphase
3 0.500002 Integrated Volt- Amps Received Polyphase
4 0.500002 Integrated Q Delivered Polyphase
Close
Help

## Read | Self Read Registers (JEMStar only)

This feature will read and display data that is contained in the JEMStar's Self Read registers. The Self Read function can be used in a manner similar to Load Profile, whereby the meter can automatically read up to four registers on a user-selected schedule. To define the Self Read register parameters, refer to the JEMWare instruction manual 1083-602 under the Timekeeping menu for further information.

Note: Self Read registers should not be used as a *replacement* for Load Profile channels. Memory is very limited and these will only store up to two days of readings. Only the most recent 36 time periods are reported in *JEMRead*.

This is a view-only screen. You can print the information after reading it by disconnecting from the meter, and then going to File | Print | Selected Meter's Device Info.

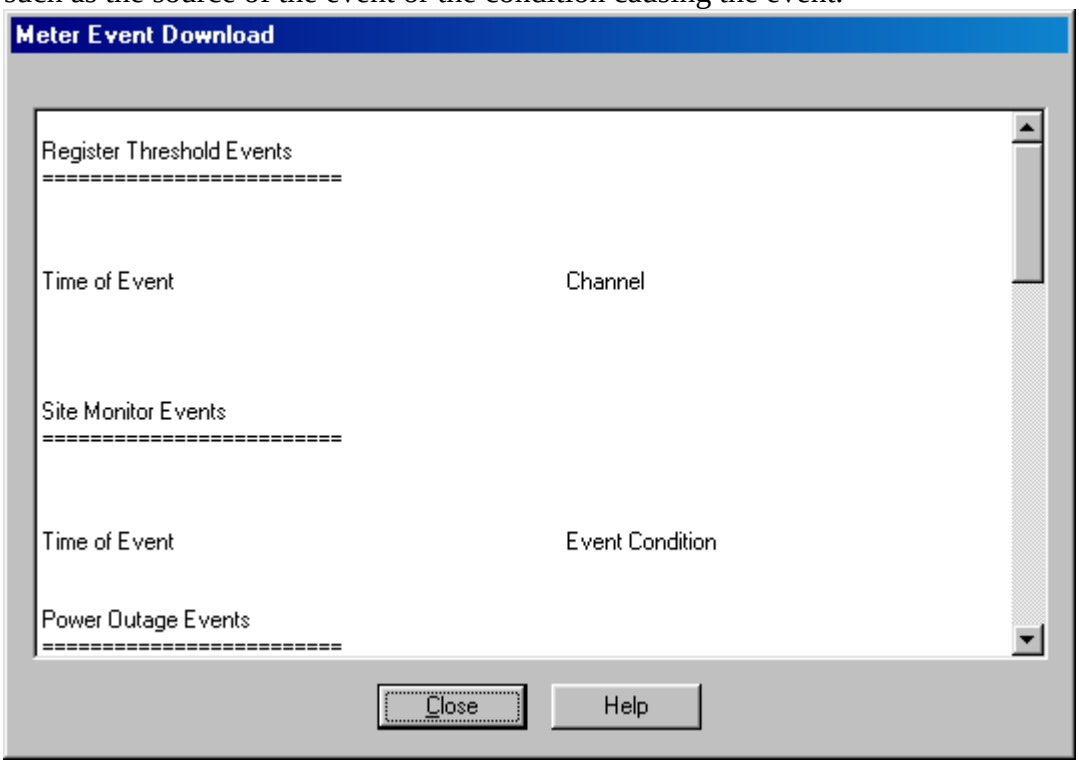


### Read | Event Download (JEMStar only)

The Event Download feature is used to view the time and date of occurrence for meter events such as:

- Threshold and Site Monitor alarms
- 3 most recent Power Fail alarms
- Meter time/date change
- Register Freeze
- Billing Period Reset
- Meter Configuration or Re-Configuration
- Password Attempt

In addition to the time of the occurrence, other related information is displayed such as the source of the event or the condition causing the event.



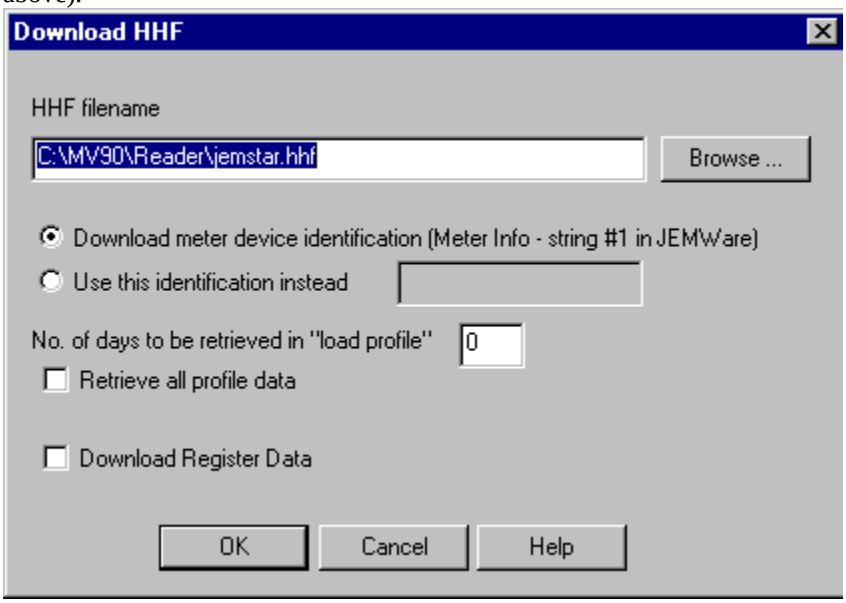
### Read | HHF Download (JEMStar only)

The HHF Download feature is used to create an HHF (Hand-held Format) file for use within MV-90. MV-90 is a widely used software package that provides such features as:

- Data Collection
- Data Validation
- Analysis
- Billing Management

In order to provide compatibility with MV-90, *JEMRead* has the ability to manipulate its data in a format that is easily imported into MV-90.

To begin, select the menu option "Read | HHF Download" or choose the toolbar icon (seen above).




**Step 1:**
Select a location to create your HHF file to. The default location is where MV-90 expects to import HHF files from. You can either type in your location, or use the Browse button. ***NOTE:*** The directory must exist in order for *JEMRead* to create the file.

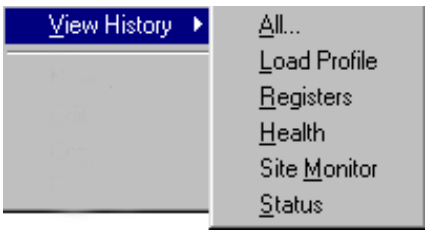
**Step 2:**
In order for the file to be properly imported into MV-90, a unique identification string must be used. You can choose to allow *JEMRead* to download this ID automatically, or override this and enter your own. ***NOTE:*** This identification string is used as the "Master File" name in MV-90® and must be exact in order for the import to be successful. For more help, consult your MV-90® Instruction Manual.

**Step 3:**
Select the number of days of Load Profile you wish to be imported into MV-90. Or choose to "Retrieve all profile data."

**Step 4:**
Select "Download Register Data" if you would like your display registers imported into MV-90 in an ASCII format.

**Step 5:**
Select "OK" to complete the operation and the data will be converted and placed in the selected data location identified in Step 1.

### Meter | View History




All six sub-categories let you view *previously downloaded data* from a meter. Once you have downloaded data from the meter via other menus, it is saved in .hst files on your computer's hard drive. You can open the saved information by clicking on one of the six choices. These choices are only available when you are *disconnected* from all meters.

Each meter has its' own individual History files. As new downloads are retrieved, the data are sorted chronologically, stored in the appropriate *.hst* file, and displayed in tabular form.

You can select which History file(s) to view. Choose "All" to view the complete History for the selected meter, or you can specify a particular type of data such as Load Profile, Status, etc. Remember that data is *added* to the .hst files each time you download; therefore these files could become lengthy over time.

### Meter | New

Use this menu to enter a new meter in the Main window list. You can also use the New button on the right side of the Main window to perform the same function.

### Meter | Edit

Use this menu to change the setup on an existing meter in the Main window list. Highlight the meter in the Main window, and then select Edit. You can also use the Edit button on the right side of the Main window to perform the same function.

### Meter | Copy

Use this menu to duplicate the settings of an existing meter in the Main window list. Highlight the meter in the Main window, and then select Copy. This is useful if you are adding a meter with a similar setup; you can copy an existing one, and then simply edit it if there are minor differences. Use the Copy button on the right side of the Main window to perform the same function.

### Meter | Delete

Use this menu to remove a meter from the Main window list. Highlight the meter in the Main window, and then select Delete. You can also use the Delete button on the right side of the Main window to perform the same function.

# HELP MENU

The Help menu provides instructions that will assist your use of the program.

### Help | Help Topics

Help Topics will open the main Help system, and allow access to all available topics. You can scroll through the menu choices or use the Index to find a topic alphabetically.

### Help | About JemRead

About JemRead will provide basic information about the program such as Version number, etc.

### Help | Register JemRead

Register JemRead will allow you to enter a Registration Name and Number if you have been using JEMRead in the Demo mode. Please consult the factory for license agreements and further details.

## NEED HELP?

For emergency assistance or service information, please contact AMETEK at (888) 880-5361.

## WARRANTY

AMETEK warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service. AMETEK will replace any component found to be defective, upon its return, transportation charges prepaid, within five years of its original purchase. AMETEK will extend the same warranty protection on accessories that is extended to AMETEK by the original manufacturer. AMETEK assumes no responsibility, expressed or implied, beyond its obligation to replace any component involved. Such warranty is in lieu of all other warranties expressed or implied.